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Vol. XII TORONTO, APRIL, 1922 No. 4

EMBRYOLOGY AND PHYSIOLOGY OF COLONIC STASIS

G. E. Armstrong C.M.G., M.D., L.L.D., F.A.C.S. D.Sc.

Montreal

THE importance of the colon is borne in upon us by the recurring experiences of our daily lives. On its periodic functioning depend our health, comfort, mental alertness and emotional outlook to a greater degree than we care to confess. Who is more of a misanthrope than the subject of a loaded colon. Optimism and pessimism in outlook may be decided by the state of the colon, good temper or bad temper, sunshine or cloud in the domestic circle. Recall, too, the contrast between the clear skin and pinkness of complexion on the one hand and the muddy skin and sallow mien on the other hand, the former associated with the functioning and the latter with the non functioning colon. Another fact worthy of note is the extraordinary rapidity with which unloading of the lower bowel is followed by relief of general abdominal discomforts and the re-establishment of a sense of well being.

This responsiveness, this influence for weal or woe, presents the colon to our minds as an organ with a highly developed functional activity closely linked up not only with other portions of the alimentary tract, but with the higher nervous centres. They do not suggest the colon as playing a merely mechanical part, or as a structure of declining importance, a fading evolutionary remnant, to be lightly cast aside as of doubtful utility to its owner.

When we contemplate the many and rapidly changing demands which modern life makes upon our digestive system, and side by side with this the exceeding slowness with which adaptive changes in structure evolve, it is small wonder that there is an increasing strain on functional efficiency and that function gives out. This tax on function is in some measure due to the food we eat and the way we eat it, but perhaps in greater measure to the strain and stress associated with the pace of life.

From this it emerges that the determination of disease in part depends on where stress falls, and how far the individual is able to meet the stress. There is a group of people whose abdomens are over responsive to nerve impressions. Fatigue, anxiety, intensive endeavour manifest themselves in the hollow viscera, and it may be, through the agency of internal secretions. So do reflex disturbances. In some, it may be, the stomach is irritable and hypertonic, and secretes too much hydrochloric acid: such are prone to duodenal ulcer, whereas in others the distal colon is irritable and hypertonic, and has its secretions disturbed: such are prone to colitis. In both of these the prime cause of disease is disordered function and it is curious to note that the first is more common in men and the second in women."

The words that I have just read to you form the opening paragraph of the annual oration to the Medical Society of London by Lord Dawson of Penn. a man that did wonderfully good work as a physician and as an organizer during the war.

I think that I may assume that the majority of you accept the views expressed by Lord Dawson as approximately correct, at any rate

sufficiently accurate to form a basis for further consideration and discussion. The next question that arises, naturally is. Why is it so: I think that the reply would be in general terms, that within the colon are matters that if not regularly and properly disposed of otherwise are absorbed into the body and there interfere with the functioning of the organs concerned in the carrying on of the processes of life. Further thought would evolve the idea that delay or retention is closely related to absorption. Metchnikoff a pathologist, Barclay Smith an anatomist and Sir Arbuthnut Lane a surgeon, have developed this idea, and preached it till we are all familiar with the arguments: it may even be possible that the subject has suffered from being over advocated. You all know, I am sure, the pathology and morbid anatomy of this subject as taught by Lane. Sir Arthur Keith has given a very valuable and enlightening contribution in his discovery and description of nodal tissue situated at different points of the alimentary tract, that control the movements of the stomach and intestines. Indeed it is possible, may I even say probable, that the real pathology of what we term colonic stasis may finally be proven to be a question of nerves.

However, our distinguished British colleague would relieve the situation by removing the colon. As a result of his teaching the colon has been removed many times, and in many countries and by many surgeons. I do not propose to discuss the procedure nor its results at the present time, but will simply say that it is a very major operation, that has not always been followed by the happiest results.

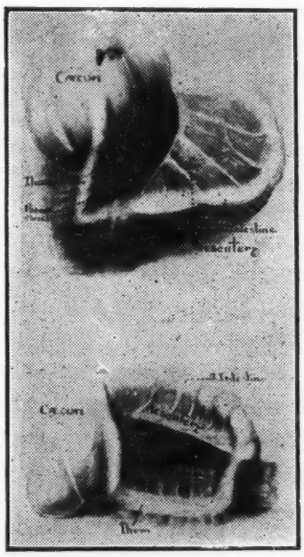
Draper and Lynch in their experimental work found that absorption was particularly active from the caecum and ascending colon. Many surgeons welcomed this finding and treated cases of colonic stasis by removing the caecum and ascending colon and joining the lower ileum to the transverse colon. Speaking for myself I may say that this comparatively simple procedure has given quite as much satisfaction if not more, than a complete colectomy.

A recent experience has suggested that embryology may perhaps throw some light on this question of colonic stasis, particularly if it is found that the caecum and ascending colon are responsible for the toxaemia that results from intestinal stasis.

By one of those strange coincidences that we are all familiar with, the two patients presenting the rare anomaly that I now report were in the Royal Victoria Hospital, Montreal, at the same time. The anomaly consists in the absence of a mesentery for the terminal six or seven inches of the ileum.

My own case was a man, age 33 years, sent up to me as a case of recurring appendicitis. He gave a history of having had three attacks at intervals of a month or six weeks. The outstanding feature in his history was the severity of the pain during the attacks. He told us that during the last attack, from which he was just recovering, morphia failed to give relief, and that he had been kept under the influence of ether from 11 p.m. until 6 a.m. the following day. He referred all his trouble to the region of the appendix, and on admission the right lower quadrant was definitely tender. Seventy-two hours after admission I proceeded to uncover the region of the appendix. The condition observed on opening the abdomen was most unusual. The caecum was very mobile, and on pushing it and the ascending colon inwards, the tissues outside the colon were found to be haemorrhagic, ecchymosed, and at one spot the peritoneum was found lacerated. The appendix was curled up external to the ascending colon, and retroperitoneal. It was congested. The area external to the colon looked almost exactly as if he had been kicked with a heavy boot. The terminal six inches of the ileum was subperitoneal. The deficiency in the mesentery began in the pelvis in front of the sacro-iliac synchondrosis, about an inch below the brim. From this point the ileum passes up over the external iliac vein and over the psoas muscle to its junction with the caecum. It was very intimately adherent to the wall of the external iliac vein by means of normal tissue. There was no sign of inflammatory action. The appendix was removed: and the caecum and ascending colon were sutured to the outer abdominal wall by three rows of sutures. So far there has not been any recurrence of symptoms.

The other case was discovered at autopsy. The patient had been under the care of one of my colleagues for a condition not associated with the anomaly. On tracing the small gut downwards, it was found to be free from adhesions or exudate, and apparently ended suddenly at the brim of the pelvis over the right sacro-iliac joint. On lifting up the caecum, which was markedly dilated, it was found to be very mobile, with a definite mesocolon, and to be apparently disconnected from the ileum. This was due to an anomalous condition of the last six inches of ileum. The mesentery ended abruptly at the brim of the pelvis over the right sacro-iliac joint, where the ileum became retroperitoneal and ran posteriorly across the iliopsoas muscle, then turned upwards for nearly three inches, and lay in the groove between the iliopsoas and the quadratus lumborum. It then reached the posterior surface of the caecum, on which it ran downwards for about two inches to approximately its normal insertion at the ileocaecal valve. In this manner, with the caecum in its normal position, it ran a course



My own Case

Second Case

forming a loop with rather a sharp turn or kink at its point of junction with the posterior aspect of the caecum. This whole loop, when the caecum was lifted up, was completely flattened, and so not noticeable: thus causing the appearance of the abrupt ending of the ileum at the pelvic brim. Manipulation of the small gut and caecum caused this loop to fill with gas and come into view. It is probable that the anomaly caused a partial obstruction under certain favourable conditions.

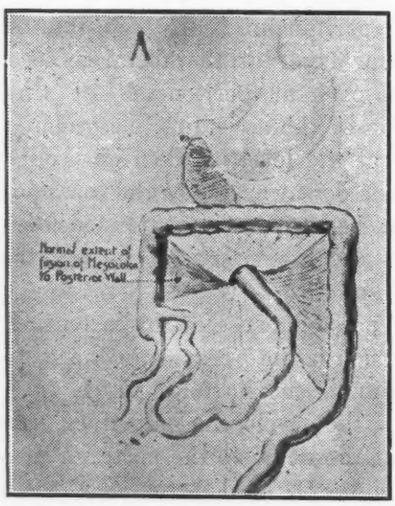
It is interesting to note that since these cases were observed, Professor Whitnall (Anatomy) and Professor Simpson (Histology and Embryology) have found two similar conditions in 50 bodies in the dissecting room of McGill University. In these latter there was no clinical history, and no evidence that the anomaly had contributed to the death.

The only similar cases that I have found recorded in medical literature were reported in May, 1890, and published by W. H. Bennett, Surgeon to and Lecturer on Anatomy at St. George's Hospital, and Rolleston, Curator of the Museum. They reported three examples of the anomaly, their attention being called to the condition by the fact that it was "associated with, and probably instrumental in producing a fatal twisting of, the lower part of the ileum." The cases that were observed in the Royal Victoria Hospital differed from those reported by Bennett and Rolleston in the length and mobility of the caecum and ascending colon. In their cases the caecum had not descended into the right iliac fossa, but lay over the right kidney. Moreover, the caecum was small and of the foetal type.

Normally, the ascending mesocolon of the foetus is flattened against the posterior abdominal wall on the right side, and fuses with the parietal peritoneum. The posterior layer of the foetal mesocolon and the foetal parietal peritoneum are obliterated and the anterior layer of the foetal mesocolon becomes the parietal peritoneum of the adult. This fusion of the ascending mesocolon normally begins at the level of the right colic flexure and extends downwards. In the cases described, this fusion has apparently extended low enough to include the mesentery of the terminal part of the ileum.

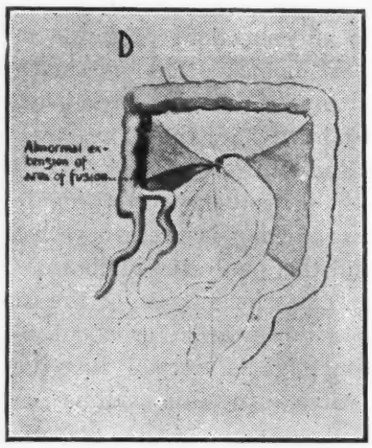
A very possible cause of this extension of the area of fusion is the presence in the foetal stage of a 'genito-mesenteric fold' which, by putting traction on the developing mesentery, may cause a fusion of the ileum to the posterior abdominal wall. Douglos G. Reid describes a 'genito-mesenteric fold' found in 11 of 20 foetuses examined. It passes from the inferior surface of the mesentery in the right half of the abdomen, forming an antero-posterior septum lying in the vertical plane, and incompletely dividing the portion of the abdominal cavity below the root of the mesentery into two compartments. The

smaller of these is on the right side and contains the caecum, the larger on the left contains the pelvic colon. The fold is triangular, and has two attached borders (superior and posterior) and one free (inferior). The posterior border is attached to the posterior abdominal wall along the line of the right spermatic or ovarian vessels. The superior, or mesenteric, border is attached to the inferior surface of the mesentery, often to a considerable extent. This attachment to the mesentery is generally exactly along the line of the iliac branch of the ileocolic artery. The upper part of the fold may persist as the free edge of the duodenorenal ligament of Huschke. Its lower part may persist in the adult, forming the median boundary of the retrocolic fossa, passing from the ileum or appendix. It is the commonest cause of a retrocolic position of the appendix. "The fold may also assist in producing adhesions of the duodenum, caecum, and ileum to the posterior abdominal wall. Adhesion in the adult, binding down the terminal part of the ileum, the caecum, the appendix, the mesentery, the mesoappendix, and even the 'bloodless' fold of Treves, need not be the result of pathological changes, unless the natural causes we have indicated for the adhesion can be excluded, although a genitomesenteric fold may not always be seen, even in the foetus."



I believe that it is generally admitted that the peritoneum does not hold in suspension the stomach, small or large intestine. The organs within the abdomen are held in place chiefly by the abdominal and pelvic muscles. The folds of the peritoneum maintain the organs in their proper relations to each other, but they do not support them at any particular level.

That the caecum and ascending colon are sometimes found dilated and with thin walls is a fact known to all abdominal surgeons. That their content is abnormally slow in passing the hepatic flexure in a percentage of people is demonstrable by the X-Rays. In trying to determine the reason for the unusual delay it seems to me obvious that in addition to poor muscular development and insufficient support one must consider the embryology and the nerve



supply to the musculature of the colon. It seems reasonable to assume that in a delayed colon content all kinds of toxic products may result from bacterial action, and one perhaps too readily concludes that the absorption of toxins is the cause of many of the symptoms indicating imperfect function of the colon. Another thought is I think suggested by the part played by the colon bacilli in the production of thyroid secretion. If it is true that the child before birth gets its thyroid secretion from its mother and only manufactures its own thyroxin after the pancreas and intestinal bacteria begin to operate on the protein molecule one may wonder if imperfect functioning of the colon is as simple a matter as some have thought it to be, or whether with further knowledge we may find it bound up with the subject of internal secretions.

There is another question associated with a loaded ascending colon and colonic stasis. Acute arterio-mesenteric obstruction is a condition that is rather well understood now. Many physicians and surgeons of hospital experience have recognized it and seen it disappear rapidly under postural treatment. It is a common experience of surgeons to find, not infrequently, when operating in the upper abdomen, a definitely dilated duodenum. Sir Arbuthnut Lane noticed it and regarded it as

one of the sequelae of colonic stasis; i.e. he thought it was evidence of a chronic stasis lower down. A couple of years ago I asked Professor Whitnall if he ever found any evidence of pressure upon the 3rd portion of the duodenum by the superior mesenteric artery. He very kindly undertook to examine the bodies in the dissecting room at the McGill University before giving a reply. He finally repeated that in twenty bodies there was apparent a groove that seemed to indicate that the artery had exercised a degree of pressure on the duodenum during life.

Bloodgood has diagnosed this as a chronic condition in three cases and relieved them by removing the ascending colon. The patients had suffered from vomiting, delay in emptying the stomach with a residuum containing bile and duodenal contents and there was present a dilated caecum displaced into the pelvis. Bloodgood's idea is that this can only occur when the lower end of the ideum has a very short mesentery. Possibly this condition of dilated and displaced caecum may be associated embryologically with the over development of the genito-mesenteric fold.

The different views here expressed indicate that we have yet much to learn about colonic stasis. This much can be stated that removal of the caecum and ascending colon in selected cases is followed by a wonderful improvement in the nutrition of the patient and an increased power of repair and resistance of chronic infections. It is a safe operation and one that is not followed by the troublesome adhesions that are sometimes seen after a complete colectomy.

Value of Drugs in Surgery.—For the maintenance of its essential difference in potential, the cell depends on (a) an abundance of fresh water; (b) oxygen; (c) rhythmic alternations of periods of rest and sleep. These fundamental requirements are the final guide tothe surgeon in his selection of conserving and remedial agents. To insure an adequate supply of fresh water and of oxygen to the cells, as may be required in the individual case, George W. Crile, Cleveland (*Journal A.M.A.*, October 8, 1921) utilizes the transfusion of blood and the subcutaneous injection of water, both of which are given through the organism with increased force and certainty as the result of digitalizing the myocardium. Excessive activation by fear, worry or anxiety, with the resultant concentration of acids in the cells, is controlled by management, aided, when necessary, by bromides or by morphine; by using the readily taken, comparatively innocuous anæsthetic, nitrous oxide-oxygen; by administering the anæsthetic in the patient's room and taking him to the operating room under anæsthesia, and in selected cases, by the preoperative administration of morphine and scopolamine for the purpose of maintaining an even metabolism, that is, an undisturbed internal respiration. Excessive stimulation of the nerve cells by the trauma of the operation is controlled by local, regional or spinal anæsthesia with procaine—the safest local anæsthetic for general use. Post-operative activation is controlled by the application of heat, by morphine, by blocking the traumatized area with quinine and urea hydrochloride. Atropin is used to prevent mucous, especially in operations on the respiratory tract. For the control of excessive metabolism as in post-operative hyperthyroidism, refrigeration, by literally packing the patient in ice, is specific. Bromides and morphine lessen the drive, and aid in securing the state of negativity essential for restoring the difference in potential in the cells. In certain cases in which morphine acts as a stimulant rather than a narcotic, large doses of bromide given by rectum will quiet the patient. Thyroid extract and thyroxin are used to supply the physiologic need in cases of thyroid deficiency; calcium lactate and parathyroid extract in cases of parathyroid deficiency. Alcohol and strychnine are rarely used. The former is of value in certain apathetic infections, especially in the aged or in those who have been accustomed to it. In general with the exception of the employment of digitalis to stimulate a weak myocardium, the use of stimulants is scarcely worth while and may be harmful. The use of a solution of sodium bicarbonate as an agent for combating shock is of little, if any, more value than water. In both war and civilian practice, it has been found that solutions of gum acacia not only have no value but probably have caused a number of deaths. Glucose solutions are of little value.

THE NEXT GREAT ADVANCE IN MEDICINE*

PROF. A. B. MACALLUM, Sc.D., F.R.S.

In Perpetuum, Frater, ave atque vale!

IN selecting as the subject of my address to-day "The Next Great Advance in Medicine," I have been influenced by the reflections and observations of thirty years on the trend of the development of Medicine as a Science and on the possibility in our day, or in the immediate future, of the discovery of a new line of advance which may result in recasting much of our knowledge of disease and of adding to it to an extent that will signalize the discovery as epoch-making. I am indeed not the only one who has had such reflections and made such observations. There are to-day quite a number of leading members of the profession and of the more prominent teachers in the Sciences ancillary to or classed under Medicine who feel that progress under the present trend of development has slowed up because the methods and the lines of attack in our present activity have been exploited very fully and further effort results in the addition of details, not general facts or outstanding principles, to our stock of knowledge.

There are even some who have initiated or have attempted to initiate new movements which they hope and believe will contribute greatly to our knowledge of disease. Indeed one of these is already under way and under the leadership of the distinguished clinician, Sir James Mackenzie, who has organized at St. Andrews a group of experienced clinical observers with the object of systematically studying the beginnings of disease by examining periodically and over an extended period, a large number of citizens to ascertain the course and the character of the initial stages of every pathological condition found. This movement which has been called in the press the "Newer Medicine" and by Sir James is regarded as the Medicine of the Future, has resulted from despair or a greatly lessened hope that the achievements of scientific research of the prevailing kind are likely to add much that will be signally important to our present knowledge.

That there will some day be a greatly lessened rate of progress or that Research will then have achieved its utmost may for the moment be conceded, but I do not think that day has arrived or even that it is to dawn before many centuries have passed. There are some great fields in Medicine yet to conquer by research and human ingenuity and the capacity to explore in a great pioneering way has not yet been exhausted. In consequence we may still look for developments which will mark noteworthy stages in progress in scientific Medicine and it is not too much to hope that one of these stages is near at hand. Indeed this hope itself, if stimulated, may prompt the keen and highly trained among the younger generation to attempt a new path of advance and it is with the object of stirring ambition to endeavour in a new field that I am addressing you on this subject.

There have been such stages in the development of the Science of Medicine in the past. Indeed the history of Medicine is the story of successive stages in each of which some emphasis was laid upon one or other view or doctrine which dominated the outlook of Medicine for the time. The Medicine of the ancient Greek and Roman world was a succession of eras each of which had its own special prevailing view, until Galen's teachings which held sway for nearly fifteen hundred years began to displace the doctrines of the various schools of the time. The cult of Galen was followed in the seventeenth century by a return to the old Hippocratic traditions and doctrines and these dominated the profession of Medicine until the middle of the nineteenth century. Owing to the progress that the Sciences of Chemistry and Physiology had made in the first half of that century the thinkers and leaders in Medicine began to turn to other theories and schools for a system which would permit of a new line of

*Address delivered at the Formal Inauguration of the New Medical Buildings of the Western University, November 18th, 1921.

development. In consequence the era of Cellular Pathology began with the researches and teachings of Virchow and many of the foremost in the profession of Medicine in the fifth, sixth and seventh decades of the last century believed or hoped that a new era had dawned for Medicine, an era in which all the lore of Medicine would be systematized by the knowledge which research in Cellular Pathology would produce. That Cellular Pathology was of great service and helped to advance our knowledge of the real characters of a number of diseases, those due to neoplasms especially, and also of the causation of some, cannot now be gainsaid, but it did not fulfil the hopes of those who sixty years ago were enthusiastic in their belief that it had introduced a new order in Medicine.

A new aspect began with the development of the knowledge of bacteria as an important factor in the causation of disease. The work of Pasteur on the nature of fermentation and the recognition that bacteria and yeasts play an all important part therein directed attention to the possibility of putrefaction in the wounds as well as fermentation may be due to such organisms. Lister in 1863 in consequence began to formulate the view that all putrefaction and the formation of pus in wounds are caused by bacteria and that to obtain the natural healing of such wounds of organic tissues or of structures exposed in surgical operations it is necessary to exclude completely bacteria, or if present, to sterilize them. This conception, after a struggle of nearly twenty years which preceded its general acceptance, led to methods in wound treatment which have revolutionized Surgery during the last forty-five years. The recognized value of such methods prepared the minds of many in the scientific world for the acceptance of the view that bacteria are the causative factors in a very large number of diseases, an acceptance that was reinforced by the results of the researches of Koch in the early eighties on the causation of tuberculosis. Since then Bacteriology has played an almost all-important part in the development of Medicine. The microorganisms have been hunted down in a very large number of diseases and in consequence we now know very much more about their causation than any one sixty years ago would have deemed possible.

The researches on the part played by bacteria in the causation of disease have led to the development of a new department of knowledge, that of the defense of the organism against the attack of pathogenic bacteria. This department, known as Immunology, because of the service it has rendered and which, further, it is capable of rendering, has very greatly contributed to giving a cast to our knowledge of the treatment of disease which will render the achievements in Scientific Medicine of the last forty years forever memorable.

Cellular Pathology, Bacteriology and Immunology have therefore each in turn assisted in developing our knowledge of Medicine from the scientific side and research in these lines in the years to come will still further augment our knowledge. It is scarcely likely, however, that such researches will do more than fill up gaps in our knowledge of these subjects. No great or striking advances will be possible from them alone for their conquests in the future will not embrace the discovery of any great new principle or generalization. There will be discoveries along these lines but these will concern details, as it were, not general principles or ideas likely to transform or greatly alter our viewpoint of the treatment of disease on a rational scientific basis.

Is there then no other line in which great or striking achievements in the Science of Medicine are possible?

There are indeed other Sciences which have in the last half century made very important contributions to progress in this science. These are Physiology, Pharmacology and Biochemistry. Physiology has greatly increased our knowledge of the functions of the various organs of the body and has thus enabled us to understand more or less clearly the part they play in disease. We can comprehend more fully than was possible forty years ago the phenomena which obtain in lesions of the nervous system, simply because through physiological research and clinical and pathological studies we know now a great deal more of the functions of the centres and of the various fibre tracts of the brain and spinal chord. Our knowledge of the internal secretions, in the last fifteen years greatly enhanced, permits us to understand what occurs when any one of these cease to form in the body. With the aid of physiological research we can recognize what may be involved when portions of the alimentary tract are affected by disease and also explain many of the

phenomena of disease of the circulatory and excretory organs—and so on throughout this domain in which research has given us a knowledge of the functions of the organs which is of inestimable value.

In Pharmacology we have a lore which has been forged by the enthusiastic efforts in research of three or four decades. It is exact and pertinent to our command of the use of many of the drugs and compounds included in our pharmacopoea and we employ them to-day not empirically, except in some cases, as they of the last older generation did very largely, but with a more or less clear appreciation of the effects which such drugs and compounds exercise on the body or its organs.

All this is to the good but these conquests in Physiology and Pharmacology have not served to initiate a new and striking phase in the development of Medicine as a Science. They were necessary to and inevitable in any advance and their value should not in the slightest be understimated. Without them, in the treatment of a number of diseases the ablest and otherwise most highly trained practitioners of Medicine would proceed under an enormous handicap..

Physiology and Pharmacology, like Pathology, Bacteriology and Immunology, will by research each develop in the years to come a larger and more precise body of knowledge and thus Medicine as a Science will become a larger, more precise and more stable body of knowledge, but, as the years pass, unless a new line of development is sprung in these two Sciences, there will be gradually lessening gains in the form of new knowledge as rewards for all the efforts expended in research in them.

What then of Biochemistry? Shall we say of it that its days of great achievement are in the past or yet to come?

Biochemistry, with the exception of Immunology, is the youngest of all the Sciences which lie at the foundation of Modern Medicine since it, as a body of knowledge independent of Physiology and Chemistry, does not extend back of the late "seventies" when it, under the leadership of Hoppe Seyler, had to contend with the representatives of those Sciences for recognition as a distinct field of scientific research. Its achievements in the last forty years have justified the claims then advanced in its behalf and some of its conquests have marked very distinct advances in our knowledge of the chemistry of living matter. Through the researches of Emil Fischer and biochemists of the last thirty years we have obtained a knowledge of the constitution of proteins which was, it would appear, beyond the dreams of the biochemists of any earlier time. The fundamental integers in the composition of these very complicated compounds are amino-acids which are united to each other like the links in a chain. As there are nineteen amino-acids the presence of some of these and in different proportions, or the complete absence of others in the molecular make-up accounts for the great diversity in character of the multitude of proteins which we now know. Further, we know, as the result of the researches on the digestion of proteins in the stomach and intestine, that they are decomposed to set free the amino-acids in them. They are absorbed as such and either serve as "building blocks" for the proteins which the tissues of the body synthesize or undergo decompositions, either complete or partial, which furnish as end products the urea and other nitrogen-holding compounds excreted by the kidney. The results of such researches have thrown a flood of light on the nitrogenous interchange of the body and all these with the knowledge which has been gained from very extended observation and experiments on the energy interchange have placed the subject of nutrition on a firm unshakable scientific basis. The role of proteins, fats and carbohydrates in a diet thus ascertained make it henceforth possible to determine definitely and accurately the relation of diet to a great many of the diseases of nutrition, a relation which I believe is capable of yielding a great amount of knowledge which will be of immense service in the treatment of such diseases.

All this has been achieved gradually and without any striking or dramatic result at any stage in the development of all this knowledge. It has modified the outlook in the Science of Medicine and also the treatment in a number of diseases but this alteration in the view point has been brought about gradually as the knowledge was obtained. In consequence the value of it was not appreciated as it would have been had some of its more striking facts been ascertained in a few years instead of over a period of more than three decades and, accordingly,

this knowledge did not appear to rank in importance with the conquests of the Cellular Pathology, Bacteriology and Immunology.

There is, however, one field of Biochemistry in which new and all-important facts have been ascertained in the last sixteen years, facts which have compelled us to revise very greatly our views as to the constitution of a normal diet. The diet accepted as standard till 1905 comprehended proteins, fats and carbohydrates, together with salts, in certain proportions and quantities daily of each and it was not dreamed even that there must be other constituents of the same in order that life free from disease be maintained. In that year Professor Gowland Hopkins, as a result of feeding young animals on such diets constituted of purified proteins, fats, carbohydrates and salts, all derived from milk, found that either they did not grow or quickly succumbed, while other young or adult animals similarly fed grew or remained in a healthy condition if a small quantity of milk, not exceeding a cubic centimeter in quantity, were added daily to their diet. He concluded from these experiments that there are other constituents necessary to a normal diet which cannot be classified either as proteins, fats, carbohydrates or salts and which play a dominating role in growth and nutrition generally. These he termed Accessory Food Factors. The importance of these observations was not at once appreciated but attention was directed to them specially seven or eight years later by the results of experiments by Funk on feeding pigeons on polished rice, that is, rice from the grains of which the pericarp covering has been removed by a milling process. The animals so fed developed polyneuritis in a marked degree but he found that an extract of the coverings removed from the grains in the process of polishing, when injected intravenously into a pigeon in which polyneuritis had been thus induced, cured it of this disease in a few hours even if before the injection the animal was in the moribund condition. This was in line with the observations of Eijkmann who in 1898 found that beri-beri, a disease which was at times a scourge in the East, and in which polyneuritis is the most pronounced symptom, is due to a diet of polished rice alone. Funk endeavoured to isolate the curative substance from the polishings and obtained it in a concentrated but impure form which on further attempts at isolation decomposed. As he regarded this substance or compound as of vital significance in nutrition he coined the name "vitamine" to designate it.

It was later found that there are other compounds in the food stuffs which are as essential to a normal diet as the antineuritic one which occurs in the rice polishings and which, by the way, has been found in other food stuffs. One or more of these occur in the fats of milk and exercise a remarkable directing effect on growth or on the nutrition of growth, for in diets free from it or them growth will cease, rickets may develop and an affection of the conjunctiva of an ulcerative character may supervene. Further it is now known that scurvy is caused by the absence from a diet for a time of a compound which is present in green vegetables or fresh meat. These substances are now popularly known as vitamines because they equal in their importance, as regards their effects on growth and nutrition, the vitamine of Funk.

None of these compounds have been isolated in a pure form and their chemical composition is therefore unknown although the efforts to this end of a very large number of biochemists have been concentrated on them during the last five years. They are present in foodstuffs in very minute quantities and accordingly the labour of isolating them, if suitable methods for this purpose were found, will task not only the enthusiasm but also the patience of those attempting it. Their importance is such, however, as to insure the accomplishment of this object some time in the near future.

To appraise fully what the discovery of these compounds and what their role in nutrition implies is to recognize also that we have in the knowledge gained of them the beginning of a new and important phase of the development of Medical Science parallel with that inaugurated when the science of Bacteriology began to play a part in the advance of our knowledge of the causation of disease. I am strongly of the opinion that when the composition of these compounds has been definitely ascertained and they are isolable in sufficient quantities to serve for determining accurately their action, we shall have an insight into some of the more profound problems involved in the activities of living matter.

It would seem from the experiments of McCarrison and others on the effects of vitamine-free diets on animals that the intestinal canal

is one of the organs of the body primarily concerned. Under no other circumstances is the intestinal tract so markedly affected, for the constipation which develops is soon followed by an extensive sloughing away of patches of the mucosa throughout its extent. There are other results. Bacteria gain free, almost direct entrance into the blood vessels and there ensues an hypertropy of the pituitary and adrenal glands with more or less atrophy of other endocrinous organs. The signal result is, however, the extensive necrotic lesions of the intestinal mucosa.

It has been suggested that the primary action of the vitamines is to control the activities in absorption of the intestinal mucosa. That it may do so may be correct but it is probably a very inadequate summary of the influence which they exercise, for it would seem that they exert a vital effect on other structures and that the normal activities of the tissues generally depend on a constant accession of such compounds to them.

The effects of avitaminosis on the intestine is striking because of all the organs of the body there is none which performs such a variety of important functions as the intestinal mucosa does and, therefore, a deficiency of vitamines in the diet must result in more serious disorders than may obtain in other organs. What all these functions are we do not know and accordingly how the vitamines contribute to normal conditions as yet is an enigma. Here also is a new line along which a great advance may be made.

The chemistry and physiology of the intestinal mucosa is a subject which in the past has not received the attention it deserved. The intestinal mucosa is one of the great gateways of the body to disease. It is constantly exposed to the action of products of bacterial fermentation and when these are toxic the epithelial cells are the first to experience this action. In fact there are no other cells of the body which are subject to such an extreme variety of conditions and to such a constantly changing environment as are the epithelial cells of the intestinal mucosa. They undoubtedly react to a number of these and neutralize the toxic products and these cells constitute thus the first line of defence of the organism against disease. When they fail to act in this capacity disease begins in one or more of the organs and as this continues then disease develops of a type consistent with its origin. There are many facts which appear to indicate hepatic cirrhosis, several kinds of nephritis, arterio-sclerosis, angina pectoris, senile dementia and dementia precox are all due in great part to alterations in the capacity of the epithelial cells of the intestine to perform their normal functions.

What changes the epithelial cells undergo to permit of the development of the diseases mentioned we do not know. But we know very little regarding the activities of the cells. We recognize that they are active in the absorption of the products of digestion such as amino-acids, glucose, fructose, galactose, soaps and even unsaponified fats, but concerning the processes involved in this absorption we have only a very limited knowledge. Indeed our acquaintance with the intestinal epithelial cell is that derived from its morphological characters, characters which can be examined in an ordinary histological preparation of the intestinal mucosa but which do not give much insight into the physiological and chemical activities of the cell itself. Some of the processes involved in its absorption of fats can be followed under the microscope but the interpretation of what is so observed is the subject of debate to-day. We know also that the epithelial cells vary in function from the commencement of the duodenum to the termination of the ileum and that the secretions of the duodenum and jejunum differ in some marked degree from those of the ilium but this knowledge is very scanty or on a number of points exceedingly inadequate.

The reason why our information as to the activities and functions of the intestinal mucosa is so scanty is that we have not refined our methods of the study of the living cells in general and more particularly of the intestinal epithelium. The Physiologist and Biochemist are content to fashion their explanations of the phenomena of secretion and absorption by intestinal epithelial cells on the basis of their morphological structure alone. No effort has been made to discover other methods of a microchemical kind, the use of which will permit us to examine the cells in their various phases of activity and determine how they are affected through exposure more or less prolonged, to the action of the toxic elements in the contents of the intestinal canal. These methods will involve

microchemical reactions of a very delicate character but which have yet to be discovered. That there are none such known is no indication that they are impossible. Twenty-six years ago, when the author began his investigation of the absorption of iron compounds by these cells delicate microchemical reactions in tissues were practically unknown but as a result of the work then done we have to-day a reaction for inorganic iron which is so sensitive as to reveal in the intestinal epithelial cells all the details of their absorption of unorganic iron compounds. Seventeen years ago there was no delicate microchemical reaction for potassium, when the author endeavoured to localize microchemically potassium salts in animal and vegetable cells and as a result of that effort a delicate microchemical reaction for potassium is now at our command which enables us to localize under the microscope the faintest trace of this element in living cells and accordingly we can determine with the results of this reaction variations in the surface energy in the living cells which could not otherwise be revealed. We have also discovered very sensitive reactions for phosphoric acid as phosphates and for chlorides in the living cell which enables us to locate their distribution therein. Is it, therefore, too much of a "pipe dream" to hope that in the near future we shall discover microchemical reactions which will be decisive in revealing under the microscope in living cells constituents whose distribution will be indicative of what takes place in them? Indeed I am certain that in the near future a new generation of Biochemists will discover colour reactions for at least some of the amino-acids, the products of the digestion of proteins in the intestinal tract, for glucose and fats and soaps which will enable them to follow the course taken by these substances through the intestinal epithelial cells and for toxins which will permit them to investigate the effects of these not only on the intestinal epithelium but on the tissue elements of other organs of the body. With this armamentarium the physician of the near future will be in a position to understand the causation of a number of diseases which is now beyond the ken of the etiologist of to-day.

Amongst these will be those due to changes in the character and activity of the intestinal mucosa, and in large part, of its epithelium. Perhaps to such listed above we may add diabetes mellitus. In this disease there is a failure of the power of the tissues of the body to utilize sugar, a failure due to disease of the pancreas which in its normal condition is supposed to furnish to the tissues some internal secretion that is concerned in this utilization. This is the general view but there is also at certain stages of the disease a failure to metabolize completely the fats of the body. That other organs than the pancreas are involved in this disease seems to be borne out by the observations of Dr. Charles Workman, made about twenty years ago to the effect that in all the post mortem examinations of cases of diabetes mellitus which he made there was a very marked hypertrophy of the duodenal portion of the small intestine. The significance of this has never been investigated and this is a signal illustration of the lack of interest which has more or less characterized the attitude of Clinicians, Pathologists, Biochemists and Physiologists in regard to the part played by the intestine in the causation of disease. It will be quite otherwise in the years to come. I am firmly convinced from all my observations on the intestinal mucosa from the biochemical side that the greatest advance in Medicine of the next three decades will be based on the results of investigations of the chemistry of the intestinal mucosa which, as already stated, I regard as the great gateway to disease of the body.

It is evident then that we need not yet despair of the development of new and great lines of advance in Medicine which will yield results probably of as signal a character as those won at any time during the last half century. This will involve, not a discarding of the valuable part of the lore we already have, but a recasting of it as the years pass, and we can consequently look forward to a time when the Science of Medicine will be a splendidly organized body of knowledge of supreme service to mankind. Let each, therefore, of the younger generation amongst you take heart and prepare, if it is at all possible, to take part in this advance.

The vision is also for the Faculty. It must now, more than ever, aim at a high standard of achievement in all the lines of endeavour which characterize Scientific Medicine. The teaching and facilities offered to students in the Professional Departments must be, as they are now, of a kind that will satisfy the most exacting critic, but this will not be all-sufficient if there

is not ample provision for developing research in the Scientific Departments, and if, at the same time, there is not the spirit and the effort made to keep step with the scientific legion in research. By prosecuting research the members of the staff qualify themselves for this teaching and to be known as researchers is to have a reputation with their students which will drive home what they give in the lecture room and laboratory. In after years the graduates will feel a pride that they have been taught by some who have endeavoured to explore the unknown and have in some measure added to the stock of knowledge in their lines of work. To such teachers there will also be a greater guerdon than all these. Life's values change with the years and some are wholly discarded, but to the scientific worker of the true type there is one that does not depreciate even throughout a long life and that develops in achievement in research. To have contributed, and to be contributing to knowledge introduces one to the camaraderie of the scientific world and brings in the end a world-wide recognition for unselfish endeavour. Above all, it brings the researcher, as far as an individual life may go, in contact with Truth, and in Chaucer's words, Truth is the highest thing that a man may keep.

The scientific worker also will find in research, indefatigably pursued, a consolation for many a defeated hope, many a disappointment, and in later years it will give a pleasure to life that no other occupation, however sedulously followed, will yield.

On the younger members of this Faculty and on the students even who are desirous of qualifying for a scientific career in Medicine or one of its Sciences I would therefore urge unceasing endeavour in the exploration of the unknown, each along his own line, all in the spirit of Ulysses as Tennyson represents him,—

> ------ strong in will,
> To strive, to seek, to find and not to yield,

and

> To follow Knowledge like a sinking star
> Beyond the utmost bounds of human thought.

OLOF HAMMERSTEN, PHYSIOLOGIC CHEMIST.—The present year has included the celebration of the eightieth birthday anniversary of the distinguished Swedish physiologic chemist, Olof Hammarsten, who was born August 21, 1841. To American medical readers he is well known as the author of a remarkable text-book of physiologic chemistry which, in its German and English translations, served an entire generation in the training of students in this branch of science. For many years it stood almost alone and unrivalled as a dependable reference book—a veritable encyclopædia of the progress in the chemical aspects of the physiologic sciences. Edition after edition attested the indefatigable energy and broad erudition of Professor Hammarsten of the University of Upsala. This work has truly left its impress on a considerable number of American physiologists and biochemists; and it is interesting to recall that the pioneer textbook on animal chemistry by the eminent Berzelius likewise was contributed from the Scandinavian peninsula by a professor of medicine and pharmacy a century ago. Time passes so rapidly that one generation of students takes for granted what their predecessors recognized as novelties and physiologic history in the making. In addition to book-making, Hammarsten's contributions to his science were manifold. Half a century ago he made the fundamental observations on the milk-curdling properties of the gastric juice and the behaviour of rennin. He pointed out the rôle of calcium in the clotting of both milk and blood. To Hammarsten we owe namy essential facts regarding casein—the chief protein of milk—the proteins of the blood, the mucous substances in the bile and other secretions, the bile itself; and his continued fruitful scientific activities are still evident in papers which have appeared in recent months. The eminent physiologic chemist of Upsala remains as a living example of the many-sided investigators who have almost disappeared in the present age of extreme specialization.—*Jour. A.M.A.*, November 12, 1921

GLIMPSES INTO ENDOCRINOLOGY

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AS ONE looks back over the records marking the development of our knowledge of the internal secretions, one finds that about the middle of the 18th Century, Bordeu ascribed the changes seen after castration to a lack of testicular secretion in the circulating blood, while about one hundred years later, Berthold of Gottingen, demonstrated that by castration and testicular grafting, cocks retained their sexual characteristics.

About the same time Graves, Claude Bernard, Gull, Ord, Schiff and Gley were actively engaged in experimental and clinical work with the testicles, thyroid, liver and other glands. Bernard advanced the view that every organ in the body possessed an internal secretion, which passing on to the blood, determined its composition and action.

The views of Brown Séquard, in 1889, are too well known to need repetition here; yet it may be recalled that opinion is divided as to who was the great leader in this field of study, Claude Bernard or Brown Séquard.

In 1891 the treatment of myxœdema was earnestly begun by Murray, of Manchester. The work of Oliver and Schafer on the functions of the chromaffin tissue in 1894, of Halsted on the Thyroid, of Cushing on the Pituitary body, not to mention other publications, are epoch-making. None the less so perhaps are the isolation and synthesis of adrenalin by Takamine in 1901, and the separation of thyroxin by Kendall and his associates in 1914. During the last five years studies in basal metabolism have so far advanced that the activity of the thyroid gland may be accurately estimated and the fluctuations of the metabolic rate under varying doses of thyroxin closely followed.

Theory finds a large place in explaining the action of the glands of internal secretion. There seems however sufficient evidence to show that these glands are influenced by the central nervous system, while at the same time they possess a certain degree of autonomy, most marked in the sex glands, and least marked in the chromaffin tissue. (Falta) Schafer regards their secretions as excitants or depressions of cellular activity; as a result, muscular tone is altered; chemical changes are initiated, accelerated, or retarded; body weight is increased or diminished. If we would wish a broader term by which to describe their action, choice may be made of Noel Paton's phrase, in which all these glands are called *regulators of metabolism.* Experiments with thyroxin, are already most illuminating, giving at the same time promise of further discovery in other fields.

With so much of clinical importance resulting from recent war studies it does not seem remarkable that they should afford abundant opportunity for advancing knowledge on this subject. The glimpses afforded by Pende's study in this connection are very suggestive. To hormonic imbalance, or, endocrinopathic temperament or *habitus,* the writer would attribute a vast number of what he calls the war syndromes, such as the psychoneuroses and the irritable heart of the soldier; while even certain infections, including tuberculosis, are included.

Early in the war McKenzie explained the "irritable heart of the soldier" on the basis of infection and fatigue which increased neuromuscular irritability, and who can say that this view is not well founded? Pende, however, urges the view that in many soldiers developing these syndromes, there was already the "habitus" endocrinopathic, which rendered them unable to bear the extraordinary influx of psychic disturbances on body life incident to war."

By the above glance at the history of the advance of knowledge of the ductless glands, enough has been recalled to show that growth, form, sex-characteristics, emotion, nutrition, lethargy, excitability, etc., are dependent upon the normal or abnormal function of one or more of these structures. The conditions induced in man and other animals by operation and experiment, as well as those which accompany arrest-

ed development, infection, or tumors of these glands demonstrate their vital importance.

"The oldest and most valuable information on the internal secretions" says Biedl, "is that derived from clinical observation." Bramwell repeated and emphasized this view. It may therefore be of interest to pass in review a few chosen cases as illustrations.

The first case illustrates certain physical and mental characteristics associated with abnormal glandular conditions. H. H., male, at 25 years was 4' 7" in height and weighed 76 lbs. He developed normally until ten years of age when he began to have dizziness and at times double vision. For fifteen years he had attacks of frontal headache and vomiting. During this time his development both physical and mental was slow and unsatisfactory. When seen in the hospital, the skin was pale, pasty, dry and inelastic, with a considerable amount of subcutaneous fat. The patient appeared rather stupid and apathetic with slow response to questions. The voice was thin and childlike. The head was large and the scalp thinly covered with harsh coarse dry hair. There was no hair in the axillæ or on the pubes (hypotrichosis) The genitalia were small and undeveloped, the testicle had descended. The symptoms of an intracranial tumor, possibly of the pituitary, were recognized in headache, vomiting and optic neuritis and coma. The patient died after a few months of intermittent observation, having been in the wards three times. The autopsy showed a tumor of the pituitary and choroid plexus, atrophy of the thyroid, adrenal and testes, porencephaly, œdema of the right optic nerve, *persistent thymus,* adiposity and effeminate characteristics. Dr. Oertel's report on the histology of the tests is as follows:- "In general the appearance of the testicle is that of an undeveloped puerile organ. With few exceptions, the tubules are small and narrow..... The several layers of epithelium lining the tubules present generally the undifferentiated appearance which is characteristic of the time before puberty.

The almost entire absence of the interstitial cells of Leydig is striking. There are only a very small number of cells, which, while not characteristic of typical Leydig cells, may be embryonic forms. We have to do with an immature and probably non-functioning testicle corresponding to the puerile testicle before the time of puberty. It would seem that there had occurred a standstill in the proper development of the whole testicle. "In this case there was *infantilism* associated with a pituitary tumour, and testicular defects, especially of the *interstitial* cells of Leydig."

Over against this case of a male of 25 years, one may present in outline and contrast a report of a case which will be published in detail by Drs. A .T. Henderson and W. H. P. Hill, whose kind permission to make use of it on this occasion was given me a few days since. The patient, a lad of five years, while at play, fell on the ice and soon afterwards showed signs of an acute and painful condition in the abdomen, most marked in the right upper quadrant. He showed on examination, in addition to the signs and symptoms of suffering, a development in one so young that arrested attention. The voice seemed to be that of a youth undergoing *change;* permanent teeth were in evidence; pubic hair was fairly abundant with hair on the upper lip and in the axillæ and on the extremities. The external genitalia resembled those of a boy of sixteen years. Erections were occasionally noticed. Surgical measures revealed a retroperitoneal tumour with large recent hæmorrhage in the right upper quadrant of the abdomen. The tumour was removed and after a severe illness the patient is now quite well, while the secondary sexual characteristics once so well marked have largely disappeared.

The pathologist in his report on this tumour, states that it is a tumor of the adrenal cortex—so called hypernephroma.

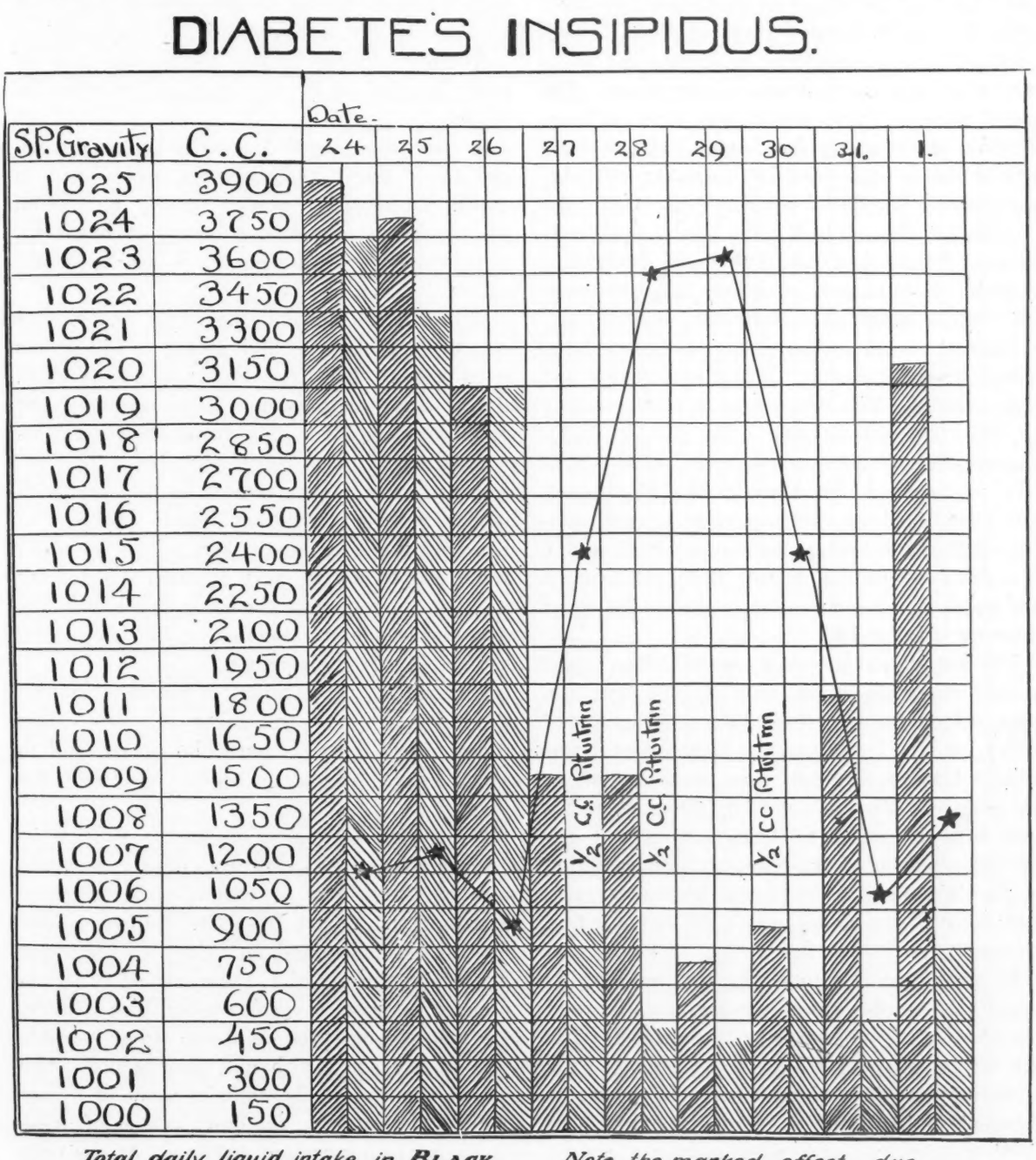
The youth in our first case remained in a sense an infant, because of a tumor; a pituitary or hypophyseal tumour. The child in our second case, was or was about to become a man because of a tumour in the right adrenal cortex.

Cases of pubertas præcox in the literature are comparatively few. A tumour of the pituitary, pineal gland tumours and tumours of the adrenal cortex are reported associated with changes above described. Such cases may be classified as pubertic precocity, a form of hypergenitalism due to affections of one or other of these organs. On the other hand testicular tumours may induce pubertic precocity, a form of primary hypergenitalism. These clinical features may find their relationship and explanation in the histological similarity of the

cells of the cortex, inter-renal cells and the interstitial cells of the sex gland. (PATON P. 175.)

We may now turn to another aspect of endocrinology, not less interesting. It is now upwards of sixty years, since Thomas Addison so cleverly associated the syndrome of asthenia, bronzing of the skin, and diarrhoea with disease of the supra-renal capsule. During this time, nothing has transpired to detract in any way from the value of his original observation. While the pathogenesis of this disease may have become clearer and diagnosis more definite, yet Addison's views on prognosis in these cases have seldom if ever found an exception in literature. An outline of a case observed some years since may be of interest.

A female, aged 30 years, servant, was admitted in June, 1906, having complained of weakness with nausea and vomiting recurring over a period of six months. From time to time,



the patient needed to rest in bed three or four days, so great was the weakness; the appetite was poor, the bowels always constipated. Small dark spots were seen first in January upon her face. In March the forehead showed a definite staining and from her description the change in her skin spread rapidly to hands, and arms, with increasing weakness described as "utter unfitness for her work." Several years previous to this illness, the patient made a good recovery from an attack of right-sided pleurisy, while the family history gave but a remote connection with tuberculosis in a paternal uncle who died with that disease of the lungs. The pigmentation in this patient was most striking. Visible from afar, the hands and face were walnut in color, while near-by inspection revealed numerous spots, dark-brown or even black. All moles were almost black while the mucous membranes of the mouth and gums and conjuntivæ exceeded in the depth of colour all other cases yet seen. The left pulmonary apex showed numerous rales as of a cicatrix due to tuberculosis. The liver was palpable. The menstruation had been regular. The urine gave a faint reaction to the test for albumin. The blood examination showed slight anæmia; red cells 3,900,000, white cells 8,200, Hæmoglobin 85 per cent. The systolic blood pressure records were subsequently made with a maximum of 95, and a few days before the patient sank into stupor and coma which soon ended in death, the blood pressure stood at 68.

The pathologist's report showed that tuberculosis was wide spread and chronic, with fibrosis, calcareous deposits and many adhesions of pleura and pericardium: the right adrenal was adherent to the inferior vena cava, the left to the stomach. In summary Dr. Klotz wrote "a very typical case of bilateral caseous and calcareous affection of the adrenals with caseation in the right gland associated with great atrophy and in both firm adhesions to the surrounding viscera."

In reviewing this case, the acuteness of its course, the intenseness of the pigmentation and the absence of diarrhœa are to be noted. The sub-normal temperature is very common, while a widespread and withal healed or quiescent tuberculosis is also quite frequently found. In another autopsy report, after making a careful postmortem examination, McCrae remarked upon the fact that there was no evidence of tuberculosis beyond that found in the adrenal body, since the source of the pigmentation and the cause of adynamia in Adamson's disease are still subjects not yet decided, we may continue to be contemplative and inquisitive observers of these remarkable phenomena.

The treatment of a few of our cases with comparatively large doses of suprarenal gland as well as with adrenalin chloride hypodermically, has been followed by no encouragement whatever, not even by a temporary relief of weakness.

Another glimpse in this fascinating field of study is afforded by two cases of Diabetes Insipidus.

A clergyman, aged 46, with the usual complaints of thirst and polyuria, had been in health until nine months before admission, when, without overwork or worry or headache, he developed the condition for which he sought advice.

While in the hospital the urine was greatly increased, reaching as high as 128 to 130 ounces in 24 hours. The total output had been much higher before admission. Radiograms of the skull were negative. The blood showed no accumulation of non-protein nitrogen. The patient had already been treated by pituitrin with much, though temporary relief. One c.c. of pituitrin, posterior lobe, taken in the forenoon, would enable him to carry through the Sunday morning service, while the same dose late in the afternoon made it possible for him to preach comfortably in the evening.

This patient was advised to continue the use of pituitrin, to take sparingly of protein diet, to seek relief from his parochial duties, and to report later. So far no report has been received.

The second case came under observation in October 1916, a girl, 8 years. Her complaints were of thirst, loss of weight and frequency of urination. Apart from the ordinary infections of childhood and an injury to her right shoulder at the age of 7, there seemed to be nothing of interest to report in her past history. She was one of three children; whose parents were of average health and intelligence. She showed the typical character of urine of a case of diabetes insipidus; the daily output of urine amounting to upwards of 4000 c.c. At one time a trace of albumin was discovered. The phenolphthalein test gave an unusually high index, 96

per cent. The fundi were normal. The heart was irregular due to sinus arrhythmia. After a few weeks in the hospital she was discharged "unimproved." She returned in January 1919, with the statement made by her mother that she had been about the same as when she was in the ward until three months before admission when frontal headaches began. Vomiting at intervals began after a period of six weeks or so. There was a doubtful history of visual disturbances which was never comfirmed. She seemed to be somewhat retarded in her development and showed in her general state considerable drowsiness and undue irritability.

On account of the new phase which this case recently took on, a systematic attempt was made to explain the patient's complaints. The eye-grounds were frequently examined, but were always found normal. The blood of the mother as well as the father was negative to Wasserman tests. The history of the father included a luetic infection 20 years before, with two years of mercurial treatment. The patient's blood gave a negative Wassermann test. The cerebro-spinal fluid, although it showed a reduction in the luetic zone with the colloidal gold test and a cell count of 77, was also negative as to Wassermann test. Radiograms of the skull indicated an early closure of the sutures with rather long and perpendicular posterior clinoid processes. Headaches, drowsiness, hunger, thirst, an unstable nervous state, "hysterical" attacks, irrational, delirious, unconscious, epileptiform seizures, periods of mental brightness and interestedness, occasional vomiting, describe her condition over a long period. Increasing weakness, slowness and irregularity of the pulse, subnormal temperature, left-sided ptosis, twitching of the right leg and arm, stupor, and coma preceded death on July 20, 1920, nearly four years after she was first admitted.

The case was regarded as that of typical diabetes insipidus. There seems no reason, even in the light of the autopsy to change one's mind, for there appears but little reason to regard as other than cases of diabetes insipidus, those cases in which an organic lesion is discovered. The response to pituitrin was identical with that recorded frequently elsewhere. The anterior lobe was tried by the mouth for a period of three days. Then the whole gland was given in the same manner. No change was observed at any time in the urinary output. The chart exhibited shows the intake and output for three periods. For the first period no pituitrin is administered; then for a period of three days, one-half c.c. of pituitrin, posterior lobe and pars intermedia, was given at 9 a.m. daily, and was followed by a corresponding period during which no remedy was used. The response was striking, reducing the urine from 3,000 c.c. before to 450 c.c. during the administration. Thirst was controlled, the output was lessened and concentration of the urine was greatly increased.

The cause of diabetes insipidus has been variously explained. At one time it was thought to lie in the kidney (Taliquist and Meyer). Then the pituitary body and later the posterior lobe have been held in some way responsible for the excessive outflow. Maranon (Endo. Voc. 5) strongly advocates the view that diabetes insipidus is a hypo-pituitary syndrome, urging the *frequency of lesions* of the posterior lobe; a tumor of the pituitary pressing upon the brain in the neighbourhood, was not found as often as a sclerosis, an atrophy, or an hæmorrhage. To this he adds with equal earnestness the fact of the favourable result of hypophyseal opotherapy as a conclusive point in the argument, comparing its action with that of thyroidin in myxœdema, and regarding this action as equally significant.

Through experimental work, prompted no doubt, by clinical observations and pathological specimens, another view point of the cause of polyuria, or diabetes insipidus is urgently demanding consideration. Important contributions to this subject from the experimental side have been made by several workers. The articles by Camus and Roussy—Endocrinology, Dec. 1920, and by Houssay, 1918—are particularly interesting. This work was done in greater part before the war. After operating on dogs, and noting the results, these workers conclude (a) it is neither the injury to, nor removal of the pituitary body which leads to polyuria in the dog, but rather a superficial lesion at the base of the brain. Total removal of the pituitary body without injury to the base of the brain does not cause polyuria. A superficial lesion at the base of the brain seems enough to produce polyuria in the animal operated on. The opto-peduncular region is that within which injury is followed by polyuria. It lies at the level of the grey substance of the tubercinereum in the vicinity of the infundi-

bulum. One such experiment induced polyuria for seven months. It appears also from this article, that the polyuria is produced independently of the thirst.

Now, in regard to the post-mortem findings in the patient whose case is outlined above, the report states that at the base of the brain a mass projects to occupy the place of all the structures in the situation of the Circle of Willis. The tumour obscures the Circle of Willis and also displaces the optic chiasm and the second, third and fourth nerves. Attached to it, yet independent of it, is a large pituitary. The corpus striatum and the optic-thalamus were pushed to one side. The situation of the tumour showed that it undoubtedly involved that zone, the injury of which produces polyuria.

Histologically, the anterior portion of the pituitary is involved with new cell growth. When one reviews the clinical history of the patient, there seems to have been a long period of polyuria before the development of any signs which one could ascribe to intracranial tumour. Symptoms of diabetes insipidus were marked in 1916. Late in 1918 the headache was first complained of. On microscopic examination *only* were signs of tissue change discovered in the pituitary, while the tumour itself, from the description above, is seen to be of considerable size.

See Circle on cut

The interest in such cases deepens with more clinical and experimental evidence, which one must admit is not all in favor of the view that diabetes insipidus is a hypophyseal syndrome.

INTRODUCTORY REMARKS

F. C. Neal

Peterborough, Ont.

THE programme for this afternoon is somewhat of an innovation; and I have been chosen, as one of the members of the Ontario Laennec Society, to explain to you what this Society stands for, and our reasons for arranging the programme as you find it.

This Society was organized several years ago, for the more scientific study of tuberculosis, by a group of men devoting all, or a greater part of their time, to this work. Three meetings have been held each year, the different institutions throughout the Province have been visited, and much interest has been maintained in the work. Among other things accomplished, has been the drawing up of a system of Diagnostic Standards of Tuberculosis, which we hope to have published some time in the future.

When we received an invitation from the Ontario Medical Association to take part in the program, it was only after careful consideration, that our contribution as outlined, was decided upon.

Instead of dealing with some complex phase of the subject, we have chosen something more common and simple, and yet extremely important, viz. "The Essentials of present day knowledge of diagnosis of Pulmonary Tuberculosis." Not that we have anything new or spectacular to offer, but we feel that the profession as a whole, is not using to the best advantage, the

Being part of a symposium on tuberculosis (other papers will appear in next issue).

means of diagnosis already at its disposal.

In order to cover the field as completely as possible, and to present only the essential points, the society was divided into committees, each choosing a convenor, who will read the paper as prepared by his committee.

The papers have been arranged as far as possible in the order of their importance in diagnosis, a carefully taken history of the patient coming first, followed by a record of his constitutional symptoms. We cannot too strongly emphasize the point, that these steps are more important than the physical examination.

In the paper on "Physical Signs," you will be reminded that the proper preparation of patient for examination, is a "sine qua non," and that inspection, and percussion are as important as auscultation, which should be the last phase in the physical examination, and not the first, as is a common practice.

Coming to the use of X-ray as an aid in diagnosis, the clinician should remember that it is merely an aid, not a short cut replacing physical examination.

The X-ray plates, especially the stereoscopic, are of great assistance in many cases; but there are so many technicalities involvd in the process of taking plates, and so many chances of error in reading them, that in order to be of most value, the work in both respects, should be done only by those well acquainted with the technique.

In regard to specific tests, I would in passing, call attention to the importance given to repeated and careful sputum examinations.

As you will see indicated in the paper on "Differential Diagnosis," a wide knowledge of clinical medicine is required; and what the late Sir Wm. Osler stated in regard to syphilis, viz. "Know syphilis in all its manifestations and relations, and all other things clinical will be added unto you," might with a good deal of truth be stated of tuberculosis.

It will thus be seen, that a correct diagnosis can only be arrived at, by a careful summing up of the facts gained by all the different steps outlined; and no one has a better opportunity of detecting early symptoms and signs, than the family physician.

However, in the fight against tuberculosis, the general practitioner must not only be able to detect early morbidity and thus reduce mortality, but he must be active in the greatest field of all—the field of prevention.

To make real progress, we must get the truth about tuberculosis to the people; we must get them educated to the fact that the two common sources of infection are:— human sputum and cows' milk. We must get them to realize that infection is almost universal, and that whether the infection becomes disease or not, depends upon environment—the younger the child the greater the probability of infection becoming disease. We must impress upon the public that the contributory factors to tuberculosis morbidity include anything and everything that adversely influences the health of man.

This forces us to the conclusion that the proper place to begin preventive work is with the child. The slogan should be "Prevent contact in childhood."

We will get a grip on tuberculosis, when we create a universal and correct public sentiment concerning it, then and no sooner. The general practitioner can aid in this greatly, by educating his own patients, and by aiding all movements intended to improve hygienic conditions in his community. In my opinion the medical profession should be in a position to lead and direct the work of voluntary societies interested in public health, thus conserving energy and imparting correct information.

In conclusion we trust that the different papers, given this afternoon, may be of value in helping to sift the essential from the non-essential, that through them, your interest in the study and prevention of tuberculosis may be renewed and strengthened, and that your ability to detect really early cases of this disease will be enhanced. If we succeed in this, we will feel fully repaid for our labors.

HISTORY IN TUBERCULOSIS

H. C. Parsons, M.A., M.D., M.R.C.P.

Toronto

BY this is meant the significance of the history both family and personal, in a case of tuberculosis. The history of the present attack is so closely bound up with the symptoms, that only one or two points will be mentioned, as the others will be taken up in another section.

Family History

Tuberculosis is essentially a family disease, and as such, has a vital interest in the record of the antecedents, of the family life and surroundings, and of the ills of each member of the household. I use the expression "household" advisedly, for not only the family, but each member of the household is concerned.

In the family history there are three points for consideration:

I. Heredity. (a) Transmission of the infection. (b) Transmission of a pre-disposition to the disease.

II. Infection by contact with, and exposure to, an infective case in the household.

Transmission of the Infection

Congenital tuberculosis is an established fact, but it is rare. Of all the cases reported in literature, Huss accepts as reliable, 40 in man and 100 in cattle, Warthin and Cowie accept only 5 in man as indisputable: such children die shortly after birth. There are, however, certain cases in which tubercle bacilli have been found in the placenta and in the foetal blood without pathological lesions in the organs of the child. One is reported by Birsch-Hirschfield and Schmorl, a case of Caesarian section on a woman who had died of miliary tuberculosis. The child was also dead. Tubercle bacilli were found both in the placenta and in the foetal blood. Bugge reports a similar instance—a woman forty years of age who died of tuberculosis four hours post partum, the child died twenty-six hours after birth. Tubercle bacilli were found in the blood of the umbilical and hepatic vessel, proved by animal inoculation. No tuberculous lesions were found in the child's body.

Such cases suggest that it may be possible that Baumgarten's theory stands, that such infection can occur in utero and remain latent for years and then take on an active process in the body.

Transmission of a Pre-disposition to Disease

There is a well-grounded belief that such exists; it is a time honored theory. It was supported by Koch, and Baumgarten on the other hand disregards it.

A tuberculous mother may give birth to a puny and ill-nourished child. She may, on the other hand, give birth to a perfectly healthy child, and that child, removed from its mother immediately after birth, may show no evidences of tuberculosis. We have had cases of this kind in our experience. Parents debilitated by wasting diseases other than tuberculosis are just as liable to bring forth children of an ill nourished type. Add to that, poverty and unsanitary surroundings, and we have a case equally as bad as the tuberculosis situation.

In a study of 1000 families, J. E .Squire has noted that the families with tuberculosis parentage showed only 10% tuberculosis in the children, in excess of those with non-tuberculous parentage. This 10% small margin can readily be accounted for by infection after birth. Sutherland has shown that children of open cases of tuberculosis are much more frequently infected than those of closed cases. It has certainly been our experience in the survey of some 4,500 children, tuberculosis contacts, that those infected, as shown by a positive tuberculin test, were not necessarily ill-nourished or below par—in many cases it was strikingly the opposite.

It is obviously difficult to draw a definite line

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between the points of family pre-disposition and post natal infection in a household where a child is born of parents with active tuberculosis, for the moment the child is born, it at once becomes exposed to infection, and this exposure is taking place at the most susceptible time of its life.

There is a wealth of discussion in literature upon this much debated point of family pre-disposition. Schlossmann concludes his section on this subject as follows:- "To what extent we are dealing with tuberculous manifestations in these children, we cannot at present say." "There is no satisfactory definition, nor is there a satisfactory proof of a specific pre-disposition." (Baldwin)

Infection by Contact

In the close relations which exist between the different members of the family, and in squalid surroundings, exposure to an open case of tuberculosis must be considered the most important point in the family history of a case. It is admitted that such exposure is much more dangerous to a child than to an adult, we cannot however underestimate the menace to the latter but a child has the double chance of infection by the air, and infection also by the alimentary canal, from the careless habits of the mother, the habit of putting things in its mouth, and of playing on the floor.

In taking the history of such a case it is not sufficient to find that the members of the family are well at the present time, but has there in any of them been an illness referable to the respiratory tract. I have repeatedly found children with tuberculosis, and have received a good family history, but on examining the parents have found an old lesion in the chest, and have later elicited a history of their having passed through one or more acute attacks. As an example:- A woman 45 years of age with five children. I examined these children and the three youngest had mediastinal tuberculosis and were positive to tuberculin. On examining the mother I found a well marked fibrosis of the apex of the right lung. On questioning her she gave a history of having had a cough, sputum and pulmonary haemorrhage while carrying the third child. After delivery this cleared up. While pregnant with the fourth child she had the same thing occur, activity in the right apex with haemorrhages, and the same was repeated with the fifth child. Again. With a history of tuberculosis in the family, was the patient under examination ever exposed? That is the important point. Again. With a clear family history was there anyone else in the house with lung trouble, such as a lodger or frequent visitor, or a nurse maid. We have had a number of cases of this kind brought to our notice and that is why I emphasize the *household* as well as the family.

Family conditions also require investigation, and in our Clinic work we seek this information by means of the reports of the visiting nurses as to the home conditions, the disposal of sputum, ventilation, over-crowding, and the protection of food, and in the most unexpected way we sometimes find the source of infection. As an example:- Recently in a boy of six years of age I found tuberculosis of the mediastinal glands. The tuberculin *test was positive,* and *an X-ray* confirmed the findings. The family history was apparently good, and the parents could give no history of the child being exposed to tuberculosis at any time. It was discovered, however that at the time of the child's birth the family were living in a house with an open case of tuberculosis, and continued to do so for six months after the birth of the child. It was one of the Public Health visiting nurses who disclosed this fact, a striking tribute to the value of the visiting nurse in clearing up some of the problems we encounter in this work.

Conclusions

(1) Congenital tuberculosis is possible, but it is rare.

(2) Inherited pre-disposition—of this there is no satisfactory proof.

(3) Post natal infection is all important.

Personal History

In the personal history there are several points of importance, and the main ones that we will refer to are:-

(1) Haemoptysis
(2) Pleurisy
(3) Unexplained Fever
(4) Cervical Adenitis
(5) Repeated Cough and Sputum
(6) Ischiorectal Abscess

1—*Haemoptysis.* I refer to a frank haemorrhage of one to two drams. This will be follow-

ed by blood-streaked sputum or small clots becoming darker in color.

In the great majority of cases we rely upon the patient's statement, and owing to fallacies that may arise, it is well to investigate. The physical examination of the patient will reveal these fallacies, such as possibly a cardiac origin, or some lesion in the mouth or naso-pharynx.

Fron sixty to eighty per cent. of all cases of pulmonary tuberculosis have haemoptysis.

Tuberculosis is the cause of haemoptysis in from eighty-five to ninety per cent. of cases.

It is a well-known fact, as Osler said, that it may be months after a haemorrhage before the symptoms of pulmonary disease become established. Hence the importance of the history.

2—*Pleurisy.* In the so-called primary or idiopathic pleurisies, Eichorst has demonstrated tubercle bacilli in the exudate in 62% of the cases. The interesting point is the subsequent history of such cases and the number of them that develop tuberculosis of the lungs. In a series of 562 cases, Hamman found that 29.7% eventually developed tuberculosis. In another group there were 30%, and in a series reported by Hedges 40%. If this be the case we must assume that an attack of pleurisy is of vital import in the patient's history. Pleurisy of the dry, fibrinous or serofibrinous type usually ends in recovery. In a number of cases the symptoms are so slight as to have been hardly recognized by the patient or physician, but it often leaves well marked signs, such as a thickened pleura, which may be discovered months or years later and this may assist in sizing up a case of tuberculosis, even though no history of it has been given.

3—*Unexplained Fever.* Tuberculosis is the most common cause of unexplained fever. This does not only apply to children, but also to adults.

The history of fever where the "doctor cannot find out the cause," is quite common and is also significant.

A case in point: A female, 35 years of age. During her childhood she had frequent attacks of fever for which no cause could be assigned. At 21 years of age she entered King's College Hospital, London, to take her training as a nurse. After four months of work she was taken ill; she had fever for one month. Her case was never diagnosed, although every available means was employed. Later on she entered St. Thomas Hospital, and after a few weeks' work, she was laid up for 10½ weeks with fever as before. Here again the diagnosis was in question. She came to Canada 7 years ago. She would have short attacks of fever, three or four in a year, lasting a few days to two weeks. I saw her in one of these in July 1919. It is one of the few cases of mediastinal tuberculosis that I have seen in an adult. The glandular cases are more prone to give rise to this fever in my experience.

In childhood a history of recurring fever and vomiting with no evident cause is a common picture in mediastinal tuberculosis.

4—*Cervical Adenitis* As evidenced by a glandular mass or scars in the neck is worthy of note. These scars may have been other than the result of tuberculosis, it is true, but the irregular distorted, disfiguring cicatries suggesting long suppuration, are significant. This infection may precede pulmonary tuberculosis by months or years, and is of special interest because of the latency of the pulmonary lesion.

5—*Ischiorectal Abscess* occurs in 3.5% of pulmonary tuberculosis.

The lesion itself has been repeatedly demonstrated to be tuberculosis.

It may precede the symptoms of pulmonary disease by years.

When tuberculosis it is rarely primary, hence its importance in the history of pulmonary tuberculosis.

6—*Coughs and Colds* Repeated coughs, attended with sputum, or a tendency to catch cold readily, are important.

Pulmonary tuberculosis is notably a disease of remissions and exacerbations of symptoms and of signs, as anyone will agree who has watched a chronic case over a period of years.

It is possible that these exacerbations are a reactivation of the disease per se following over-exertion or such like, or it may be an activation brought about by some cross infections. Be that as it may, such history is all important in any case of tuberculosis.

A history of loss of weight, or fatigue, is usually part of the history of the present attack, yet in the patient's past loss of weight associated with any pulmonary condition or possibly without it, is a point well worth noting.

In the same way a history of undue fatigue, not only recent, but lasting for some considerable time, is an important point in the history of any case of tuberculosis.

TOXIC GOITRE

THE EFFECT OF THYROIDECTOMY ON THE BASAL RATE, THE PULSE RATE, AND THE GENERAL NUTRITION*

E. M. EBERTS

Surgeon to the Montreal General Hospital

IT will probably be some time before we achieve a classification of the diseases of the thyroid gland acceptable alike to the clinician and the pathologist. We have here, however, to deal with only two types of goitre, both associated with hyperthyroidism; namely, hyperplastic goitre (Graves' disease, exophthalmic goitre) and toxic adenoma (foetal adenoma, discrete nodular adenoma). Now, while the former disease is readily recognized after exophthalmos has developed, there may be delay in differentiating between hyperplastic goitre without ocular signs and toxic adenoma. Because of this, I may be forgiven if I venture to repeat once more the cardinal points in the differentiation of the two conditions.

GRAVES' DISEASE	TOXIC ADENOMA
The disease may occur at any age; most commonly between 20 and 40. Symptoms develop within three months of the appearance of the goitre. Not infrequently they are present for weeks or months before the enlargement of the thyroid is discovered.	Enlargement of the thyroid usually makes its appearance between the ages of 20 and 30. The toxic symptoms develop from 7 to 30 years later; average 16 years.
Goitre: Uniform hyperplasia, involving both lobes and the isthmus, over which there is marked pulsation, a distinct bruit, and frequently a thrill.	Goitre varies in size from small discrete single or multiple nodules, unilateral or bilateral, to large cystic type generally described as "simple goitre." Consistence varies from the fluctuating cyst to the calcified mass. Pulsation in neck is frequently absent, and there is neither thrill nor bruit.
The size of the goitre bears no relation to the severity of the toxaemia. In the severest cases there may be very slight visible enlargement.	In large goitres, because of pressure upon the trachea or recurrent laryngeal nerve, there may develop huskiness of the voice; aphonia; frequent hacking cough; dyspnoea or cyanosis upon exertion or when lying down.
Symptoms develop rapidly and generally become so severe as to incapacitate the patient within three to six months.	Symptoms are slow in developing, leading to incapacity in from one to three years.
Tremor of the hands, rapidly increasing in severity. Later possibly tremor of the whole body.	Tremor of the hands, definite but not violent.
Marked nervousness, restlessness, mental irritability, and not infrequently delirium.	Nervousness, restlessness, and irritability mild in comparison. No delirium.
Rapid loss of weight.	Gradual loss of weight.
Rapid loss of strength.	Gradual loss of strength.
Insatiable appetite.	Appetite capricious. Not usually increased; frequently diminished.
Profuse sweatings.	Skin moist, but sweatings infrequent.
Heat intolerance.	Slight or no heat intolerance.
Ocular signs: Exophthalmos appearing usually within three months from onset of symptoms. May be pronounced within six months. In 90 per cent. of all cases appears within two years. Other ocular signs—Graefe, Stellwag, Moebius and Joffroy.	Exophthalmos and other ocular signs are conspicuous by their absence.
Heart: tachycardia. Pulse range from 120 to 140, or higher.	Tachycardia. Pulse range from 90 to 120. There is usually severe nocturnal praecordial thumping.
Blood pressure normal or subnormal.	Blood pressure usually increased.
Basal metabolic rate plus 40 to plus 80.	Basal metabolic rate plus 20 to plus 40.

The following case reports, with their accompanying charts, illustrate the effect of thyroidectomy on the basal rate, the pulse rate, and the general nutrition.

Case I.—Hyperplastic Goitre

H. L. S. No. 3112-21, watchmaker, was admitted on June 3, 1921, to the service of Dr. Finley, in a crisis of hyperthyroidism, presenting all the cardinal symptoms of Graves' disease. On the night of admission he was irrational, and for a time violent. The temperature was 99; the pulse, 160.

The symptoms of hyperthyroidism dated from June, 1920. Enlargement of the neck was first detected in December, 1920. There was marked tremor of the lips and hands; nervousness; restlessness; mental irritability; loss of strength; marked quadriceps weakness; heat intolerance; vomiting; and diarrhoea. There had been a loss of 52 lbs. in weight in the preceding six months. The skin was moist, but sweating had not occurred. The urine was acid, specific gravity 1.012, and contained albumin and a few casts. The differential blood count showed polymorphonuclears 59 per cent; small lymphocytes 25 per cent; large lymphocytes 12 per cent; and transitionals 4 per cent. The thyroid was large, with uniform hyperplasia of both lobes and isthmus. There was marked pulsation in the neck, with a palpable thrill and loud bruit over the thyroid. Exophthalmos was pronounced. Graefe, Stellwag and Moebius signs were present. The transverse cardiac dulness was 11 c.m. There were no murmurs. The blood pressure was 88 diastolic, 102 systolic (a dangerously low pulse pressure). On the day after admission the basal metabolic rate was estimated to be plus 80. The weight was 66 lbs. (Normal weight - 118 lbs.)

Ice bags were applied to the neck and praecordia. Compound chalk powder was given to control the diarrhoea, and minims 3 of Tr. Belladonna was given every eight hours. At the end of two weeks (June 19) the basal rate had fallen to 58, and the pulse to 108; and from this time on the case presented a much more favourable aspect, the rate steadily declining until on July 12 it was plus 37, the pulse 96.

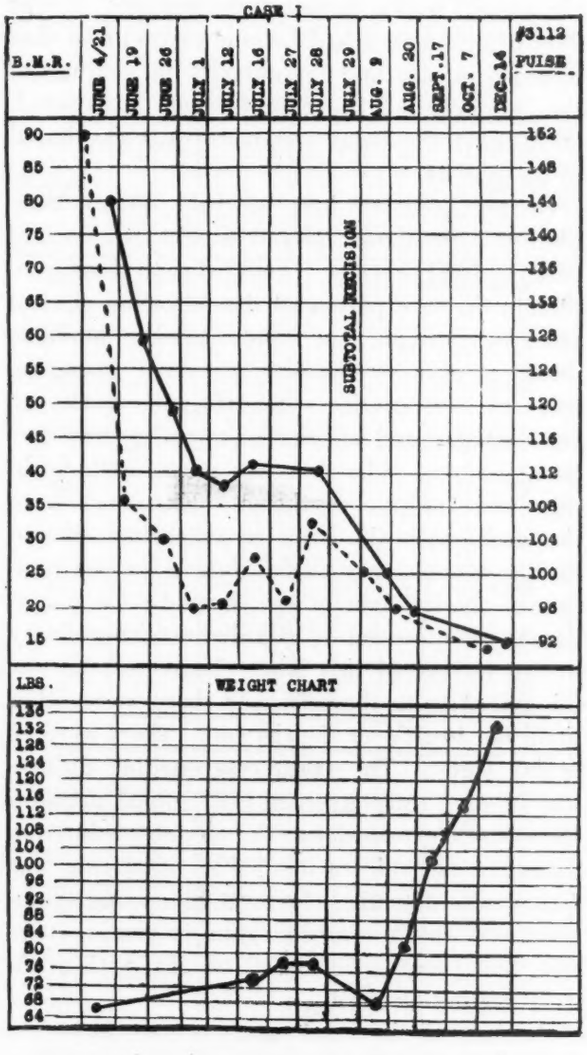
On July 14 the case was transferred to my service. At this time excellent cerebral control had been established and all other symptoms had abated. The diarrhoea, though of a more moderate grade, still persisted (four stools daily). Although the appetite could not be appeased during the 25 days preceding his transfer, the patient's weight had remained stationary at 75 lbs. Throughout the fastigium of the attack the urine was generally of low specific gravity (1.012-1.014, and contained albumin and at times numerous tubular casts. While the basal rate had now reached a level at which operation might be considered safe, it was felt that, even in the absence of physical signs, the heart muscle must have suffered severely during the period of acute intoxication. Then, too, the patient had, in spite of a liberal diet, failed to show the expected gain in weight. For these reasons and in the hope of improving the nutrition of the heart muscle, operation was postponed for a further period of two weeks, or until July 29, at which time all signs and symptoms appeared to favour the undertaking.

Under local anaesthesia subtotal thyroidectomy was performed. Apart from a very rapid pulse rate (180-200) throughout the day following operation, there was very little reaction. The usual post-operative nervous phenomena were entirely absent, this feature being the more remarkable because of the serious involvement of the central nervous system at the time of admission.

Convalescence was uninterrupted. The patient was discharged on August 25th.

Comment. During the fastigium of the attack (June 3-15) the urine had contained variable amounts of albumin, the specific gravity remaining constant at 1.012-1.014. From June 15 until the date of operation, July 29, the urine was free from albumin, but the specific gravity remained the same. Immediately following operation albumin reappeared, without any change in the specific gravity, and this condition persisted until August 22, when practically all proteins were withdrawn from the diet, with the result that within five days the specific gravity had risen to 1.022 and there was no further trace of albumin. Casts which had also been present from time to time, now finally disappeared. With this improvement in the renal function there was a rapid gain in weight, as will be seen by the accompanying chart. The patient has more than doubled his weight since operation, and is from 12 to 14 lbs. above his previous maximum weight.

This case furnished the first clue to the possibility of controlling or lessening the hyperthyroidism by eliminating, as far as practicable, proteins from the dietary. As the thyroxin molecule is a protein, it is reasonable to suppose that its elaboration may be directly affected by the protein intake.



CASE II.—HYPERPLASTIC GOITRE WITHOUT OCULAR SIGNS

Miss V. C., No. 2282-21, aged 20, stenographer, was transferred from Dr. Gordon's service on May 21, 1921, suffering from Graves' disease of a mild type.

The patient had influenza in February 1920, followed shortly after by palpitation and a feeling of nervousness. There was progressive loss of weight. The enlargement of the neck was first detected in May, 1920,when application was made for life insurance. The month of July, 1920, was spent at rest, and during this period there was a gain in weight, with general improvement in health. In January, 1921, there was a recurrence of the palpitation, nervousness, and loss of weight, with occasional vomiting.

On examination there was found tremor of the hands, with marked nervousness. There had been a loss of 20 lbs. during the previous six months, and also loss of strength. The appetite was very much increased. There was marked heat intolerance. The skin was moist, with frequent sweatings and flushings. The tonsils were submerged and cryptic. The urine was normal. R. B. C. - 5,120,000. Leucocytes - 11,400. Haemoglobin 80 per cent. There was uniform enlargement of the thyroid gland, with marked pulsation, thrill, and bruit. There were no ocular signs. X-ray of the upper thorax revealed no evidence of enlarged thymus. Heart: tachycardia; praecordial thumping. Transverse cardiac dulness 8 cm. Basal systolic murmur. Pulse range 96-110. Blood pressure 60-120. The electro-cardiogram showed a tendency to left ventricular preponderance.

On May 28 the basal metabolic rate was plus 26.

On May 31, after ten days preliminary rest in bed, subtotal thyroidectomy was performed under local anaesthesia. The diagnosis of hyperplastic thyroid was confirmed by microscopical examination.

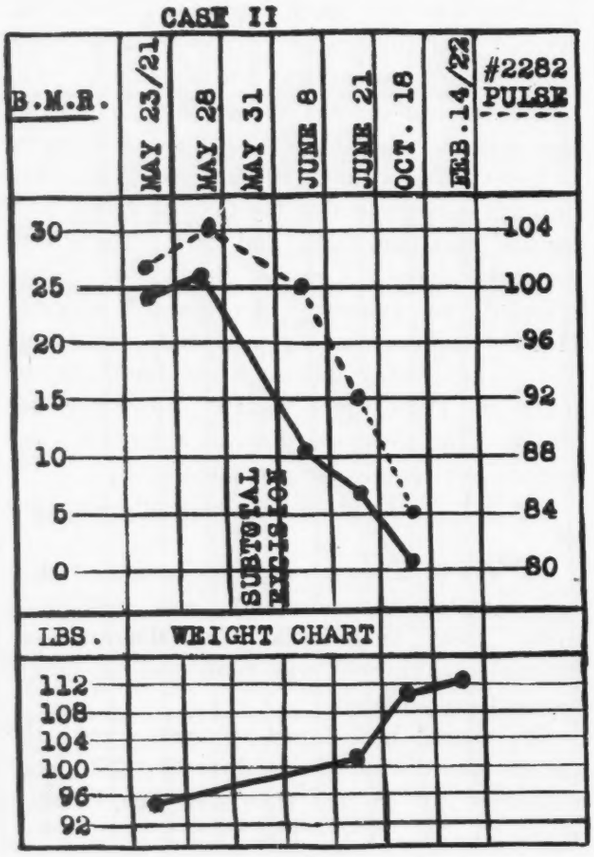
The wound healed per primam and the patient was discharged on June 21. The basal metabolic rate at that time was plus 7; pulse range 80 - 96. There had been a gain of 6½ lbs. in weight, from 95 lbs. to 101½ lbs.

On October 18 the basal rate was found to be plus 1; the weight 111¼ lbs.

Under date of January 1, 1922, the patient wrote: "My pulse is quite normal. I have had not the slightest trace of palpitation since my return from Montreal in October. There is no sign of tremor. My nerves are steadier than they have been for the last two years. My appetite is not as large as it was, but I should say it is quite healthy."

Comment. This case is quoted against the preceding one as an example of the result which may be anticipated where operation is undertaken before toxic saturation has occurred. Another lesson to be learned from this case is that, although the symptoms were relatively mild, the electro-cardiogram showed beginning myocardial changes. Indeed one feels that

myocardial changes depend rather more upon chronicity than upon the initial severity of the toxaemia. This suggestion is supported by the more frequent occurrence of myocardial changes in cases of toxic adenoma, where, as we shall see, the symptoms more closely resemble those found in this case. A further analogy between this case and the toxic adenoma type is the absence of ocular signs.



CASE III.—TOXIC ADENOMA

Mrs. A. D., No. 2960-21, aged 59, referred by Dr. Blackader, was admitted June 27, 1921.

Personal History—At the age of 34 the patient was treated for a mild pulmonary infection, from which she made a good recovery. In 1912 the patient suffered a "nervous breakdown," with loss of weight, and was in hospital for three weeks. Subsequently she was in fair health until 1915, when there developed retrosternal pain, passing upward from the xiphoid and radiating down the left arm. This was accompanied by palpitation and nervousness. Again the patient was confined to bed for one month. Fair health was maintained until February, 1920, from which time the present illness is dated.

In February, 1920, there developed palpitation, praecordial thumping, and retrosternal pain, accompanied by loss of weight. In October, 1920, The patient first noticed tremor of the hands. In February, 1921, six teeth were extracted for pyorrhoea, but without relief of the symptoms. Early in 1921, too, an attack of diarrhoea, lasting several weeks, caused grave anxiety. It was only after wasting had become pronounced that increase in size and irregularity in contour of the left lobe of the thyroid were discovered. On June 1 the basal metabolic rate was found to be plus 24.

On admission to hospital the patient complained of weakness, loss of weight, praecordial pain, and palpitation. In addition to these complaints the case presented the following clinical features: tremor of the hands, nervousness, mental irritability, severe insomnia, loss of strength, quadriceps weakness, very meagre and capricious appetite, and frequent nausea. The skin was moist, with flushings and fugitive erythema. Examination of the neck, with the head in extension, showed visible, though very slight, fulness in the position of the left lobe of the thyroid. On palpation there appeared to be a distinct irregularity in the surface of this lobe. There was no visible pulsation in the neck, and there was neither thrill nor bruit over the thyroid. There were no ocular signs. The transverse cardiac dulness was 11 cm. Pulse average 116. Blood pressure 135 systolic, 80 diastolic. The electro-cardiogram showed a normal tracing. The basal rate was found to be plus 27. The most distressing symptoms were the praecordial pain, insomnia, anorexia, and progressive loss of weight, with gradually failing strength.

On July 10 the basal rate was plus 28.

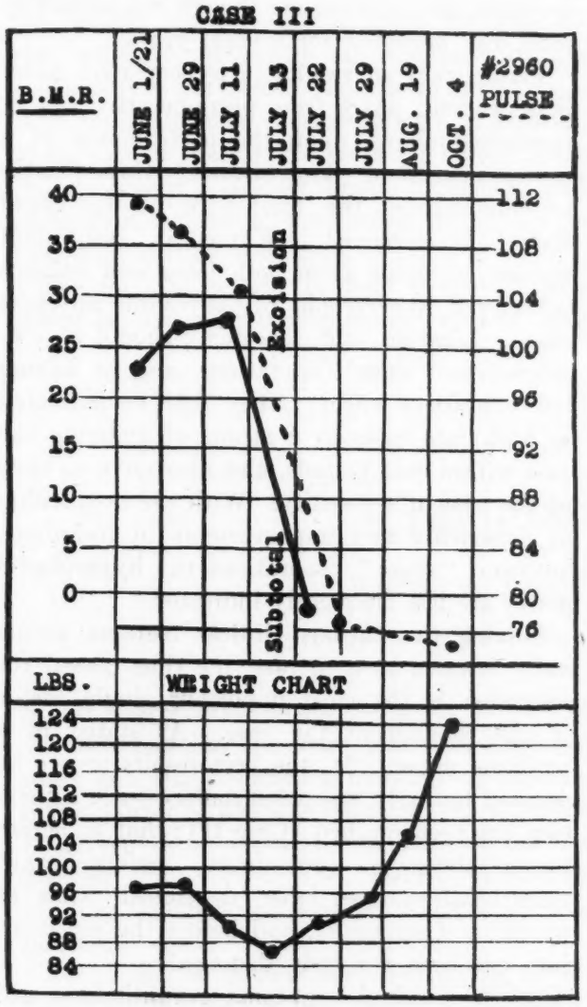
On July 13, after the patient had been under observation in hospital for sixteen days, subtotal thyroidectomy was performed under local anaesthesia. Practically the whole of the left lobe, the isthmus, and the anterior half of the right lobe, were removed. The left lobe was found to be the chief seat of trouble, and in it were found several definitely encapsulated adenomata.

Convalescence was uneventful. The praecordial pain and thumping disappeared within 24 hours after operation. The tremor of the hands had subsided by the tenth day. There

was an immediate resuscitation of the appetite, which became vigorous and constant. On the day of discharge, ten days after operation. the basal rate was found to be minus four-fifths per cent; the pulse average 76.

On October 4 the patient was seen again. There were no residual symptoms. The weight was 123½ lbs., as compared with the pre-operative weight of 91 lbs. The patient was considered well enough to undertake without risk a sea voyage to Europe.

CASE III



Comment! The outstanding features of this case were those suggested by the complaints, namely, praecordial pain and palpitation, anorexia, asthenia, and insomnia. The enlargement of the thyroid was for a long time not discernible. I have been unable to find in the literature any reference to the occurrence of severe anginal pain radiating to the arm in association with thyroid disease, where electrocardiographic or other evidence of organic changes in the heart muscle or its enervation was lacking. This patient illustrates again the possibility of an obscure and intractable diarrhoea being due to an unobtrusive lesion of the thyroid gland. (1)

Case IV.—Toxic Adenoma

Mrs. M., No. 2833-21, aged 60, housekeeper, referred by Dr. Rodgers, of Cowansville, was admitted July 4, 1921, complaining of swelling of the neck, shortness of breath, and pounding of the heart.

There had been enlargement of the neck for eight years, but the toxic symptoms did not develop until after an attack of influenza in March 1921. The patient found it increasingly difficult to perform her duties, because of nervousness and palpitation. There was also tremor of the hands, and insomnia had been a troublesome feature for three weeks prior to admission. The appetite was normal.

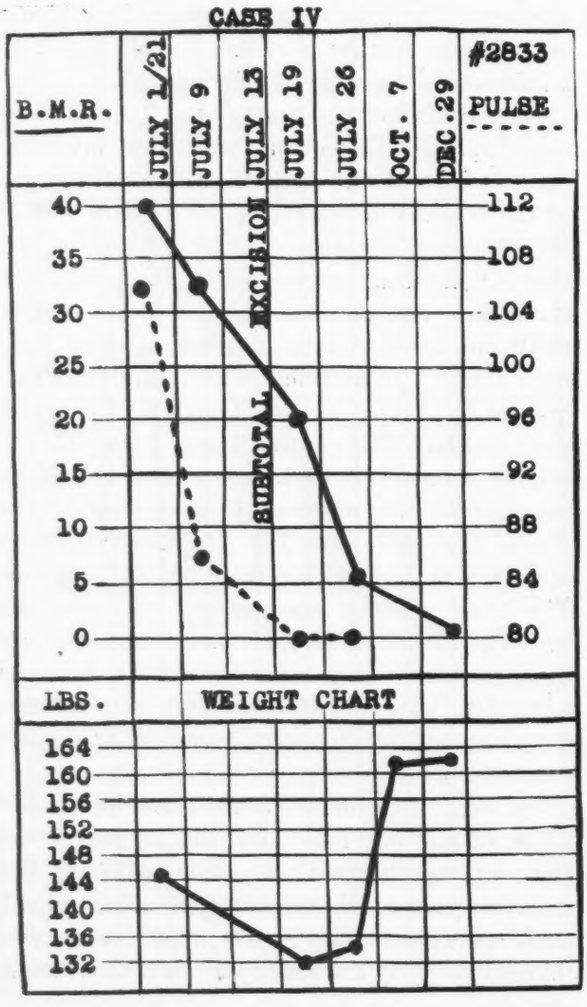
On admission the goitre was found to be large, spherical in outline, very firm, involving the left lobe of the thyroid, with displacement of the trachea to the right. The goitre was of the plunging type, rising during deglutition and then largely disappearing behind the left sternoclavicular articulation. There was neither thrill nor bruit over the tumour. Ocular signs were absent. In addition to the palpitation and praecordial thumping complained of, the transverse cardiac dulness was found to be 11 cm. from midsternum. There was a blowing systolic murmur at the apex, with occasional arrhythmia. The pulse was 102, regular, full. The radials were slightly thickened, but not tortuous. The blood pressure was systolic 140, diastolic 90. The electro-cardiogram was negative. The basal metabolic rate, taken on July 1, prior to admission, was plus 40. On July 9, after five days rest in bed, the second estimation showed it to be plus 33.

On July 13, under local anaesthesia, the whole of the left lobe and the isthmus were removed, together with a small portion of the anterior part of the right lobe. The patient made an uneventful recovery, and was discharged on July 29, the basal rate then being plus 6.

Comment. It is interesting to note the development of toxic symptoms upon the heels of an acute infection (influenza).

It is now well recognized that in from 20 to

25 per cent. of all cystic adenomata, toxic symptoms eventually develop. The foregoing case is an example of this type of adenoma. While the clinical manifestations are precisely similar to those met with in Case III. the gross pathology of the thyroid lesion is widely different. While in Case IV one had to deal with an adenoma consisting of numerous cysts of varying sizes and in different stages of degeneration, Case III represents the type of adenoma in which the lesion or lesions is circumscribed, encapsulated, and microscopically presents the characteristic features of normal thyroid tissue. Were it not for the limiting capsule, such an adenoma would not be discoverable, as the histological feature of hyperplasia is not met with.



Summary

The four charts reflect accurately our invariable experience in fifty consecutive cases of the effect of thyroidectomy upon the basal rate, the pulse rate, and the general nutrition. In no case has the procedure failed to eliminate hyperthyroidism, reduce the pulse rate to normal limits, and restore body weight. To secure this uniformity in results, it is essential that all hyperplastic cases should remain at rest for three months after operation. To maintain these results, a much longer period may be essential in those cases where the initial toxaemia has been severe and accompanied by profound nutritional disturbances (as in Case 1), or where the intoxication, though comparatively mild, has persisted for several years.

Permanency in results in hyperplastic goitre is dependent, apart from post-operative rest as mentioned above, upon the performance of a radical operation. Approximately three-fourths to four-fifths of the total bulk of the gland should be removed. Where an insufficient amount of tissue from both lobes and isthmus is removed, hypertrophy of the residue may take place. Ligation and lobectomy should be considered as "stage" operations, and as having but temporary effect. They may be indicated in high rate cases as a means of bringing the rate within safe bounds, and also serve as tests of the patient's stability. With the broadening of experience and improvements in technique, however, "stage" operations in hyperplastic goitre are less frequently indicated.

Having the various clinical features accurately assessed in each case, the time chosen for operation is the most important single factor in the conduct of the case. As stated in a previous paper, (2), the best results are to be secured by early operation, before toxic saturation has been reached (Case II); that is, before exophthalmos is pronounced, before grave nutritional changes have developed (loss of weight and strength), and before the myocardium has been seriously damaged.

Of the residual symptoms, exophthalmos and myocarditis are the most pernicious.

The form of toxic adenoma illustrated by Case III would appear to be much more common that is generally supposed. The symptom group of rapid pulse, tremor of the hands, and loss of strength, should render the thyroid suspect, even in the absence of visible or palpable enlargement; and if, in addition, the basal metabolic rate is, on repeated estimations, persistently above plus 15, there can remain little doubt of the diagnosis. Many of these cases

stumble through the period of thyroid intoxication to succumb eventually to myocardial disintegration.

That hyperthyroidism develops in from 20 to 25 per cent. of thyroid adenomata of the type illustrated by Case IV (the so-called simple goitre) is not generally appreciated. Rapid heart action and shortness of breath are ascribed to "pressure upon the windpipe," and operation is advised against because of the size of the tumour. It is true that pressure and hyperthyroidism frequently co-exist, but the size of the tumour has no bearing upon the surgical risk, which is practically nil, especially if thyroidectomy is performed under local anaesthesia.

In toxic adenoma a prompt cure is assured, if all foci of disease are removed before heart changes occur. Normal basal metabolic and pulse rates are usually recorded within ten to twelve days after operation.

The gain in weight in both types of toxic goitre is always phenomenal in rapidity and extent,—quite beyond the expectation of either the patient or the surgeon.

Clinical observations would suggest that a carbohydrate-fat dietary promotes nutritional repair more rapidly than a diet in which proteins are freely allowed, and that this may be explained on the basis that proteins favour the perpetuation of hyperthyroidism, by supplying the necessary elements for the synthesis of thyroxin. This theory, while at first applied in the treatment of convalescent patients, is now being tested as a means of lowering the basal metabolic rate before operation is undertaken.

REFERENCES

(1) Chronic Diarrhoea associated with an Adenoma of the Thyroid Gland. Can. Med. Assoc. Journal, April, 1920, A. H. Gordon and A. T. Bazin.

(2) Basal Metabolism as a Guide in the Surgical Treatment of Goitre with Hyperthyroidism—Can. Med. Assoc. Jour., September 1921.

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THE CANCER PROBLEM

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THE cancer problem has been the subject of investigation for more than two thousand years and still remains a question of superlative importance which is engaging the attention of governments, societies, commissions and the greatest endeavors of the medical profession working together and singly in the hope of a solution.

Vast sums of money have been spent in the collection of facts and figures; in the furthering of research work; in the founding, equipping, staffing and maintaining of special hospitals and clinics where cases may be treated and studied; in the education of the people and workers on cancer. The result is that at present no less than fifteen fully equipped cancer hospitals are treating patients, twenty research laboratories are working continually, to say nothing of the innumerable individual laboratories in America and Europe; each university is contributing its quota; every pathological laboratory is making known facts and findings which assist in throwing light on the problem.

All these efforts have succeeded in collecting about the problem such an enormous mass of facts that, while a very great deal has been made clear, the problem has been more or less split into numerous entities for which there does not appear to be a common cause.

The advances have been mainly in the line of classification and in the establishing of the minute structure and behavior of the different forms; and these have occurred since the advent of the microscope. Prior to this the imagination was given full play in the supposed causation, the diagnosis, and the treatment of the disease. The name given to the disease, which was thought to resemble a crab, illustrates the state of mind of the early investigators. Even as late as the seventeenth century, cancer was

thought to be caused by a spiritual being, the Archæus, resident in the stomach and spleen.

The powers of fantasy displayed by the ancients in the formulation of their theories of causation were only equaled by their ability to mystify the methods of treatment. The cancer patient was full partner in all these perpetrations, welcoming anything new and placing favor in the most weird. If he resided in England he was subjected to such mixtures as dog's fennel, crow's feet, sulphur and arsenic; and if he survived these he was qualified to consult the witch doctor, who initiated him into the black art and treated him to some witch's broth. If faith has ever cured cancer, surely it missed a grand opportunity in these manipulations of the occult science. If the sufferer lived in France he grew accustomed, on survival, to all the various ingredients of green frogs. In Germany he drank copiously of concoctions of suckling puppies; while in Africa he could be treated to nothing better than tortoise liver and cancer bush.

How all these treatments originated would occupy too much time in the telling, and would be as difficult to explain as it is impossible to know why some patients today forego an orthodox treatment and feed raw beefsteaks to open malignant tumors, which, they are observed to say, devour the steaks with avidity.

While mysticism seemed to reign in the sphere of treatment, we must observe that as early as A.D. 180 Leonides, of Alexandria, practiced excision of malignant growths by cutting through healthy tissues with the knife and cautery. That after nearly two thousand years this method should find most favor in the medical profession testifies to the integrity of some of the early observers.

While the search and research for the cause of cancer goes forward the profession will carry out the orthodox treatment in every case of cancer which presents. We should let the waiting world know that until the cause is known and a specific treatment discovered there is one cure for cancer and that cure depends upon early recognition, allowing of early complete excision. And let them know that the *x*-ray and radium treatment come after, in making doubly certain of no recurrence. In taking such a stand the profession would serve a very useful purpose in educating the victim of cancer and his friends and would materially lower the mortality rate, which today—with more cases diagnosed—has been made to appear on the increase.

There is little excuse for fatal termination in those cases of cancer which have their origin on the surface of the body, for with our present knowledge of the onset, the conduct and structure of cancer an early diagnosis should not be a difficult task. A confusion between a benign and a malignant tumor should be met by the same method of complete early excision. The hidden cancer which comes to light only when invading the body functions, or as secondary growths, is the form which cries out most loudly for a knowledge of the causation upon which adequate treatment may be based. It is in these forms that surgery, at times, can only prolong life; occasionally a judgment of inoperability must be made and the patient placed in the hopeless category with a certain length of time to live. What should be the attitude of the medical profession toward such a patient? His only hope lies in a specific treatment, which is not available. To meet this situation I would suggest that efforts be made for the establishment of a hospital in every large center where these patients would receive the most appropriate treatment and at the same time be subject to investigation.

The Criteria of Therapeutic Effectiveness in Human Cancer

In determining the effects of any given mode of treatment on a tumor the majority of observers lay stress on—

1. The circulatory changes in the tumor.
2. The relief of pain.
3. The restoration of secondarily impaired function.

The foregoing points may be useful in a purely inflammatory process, but are of little or no value in judging the effects of therapeutic methods in malignant disease.

The observation of the size of the tumor itself is the sole criterion on which to judge the effect of therapeutic measures. But even this is unreliable. The fallacy of relying upon a diminution in size is shown by the fact that the tumor may advance at one point and recede at another—that cicatrization and contracture may reduce its size and give a false impression of partial recovery. Finally, stress has been laid on the prevention of

metastasis or delay of recurrence. This statement also is misleading, for incomplete removal may be followed by apparent recovery for a long time without local recurrence..

In estimating the value of any new form of treatment the following facts must be borne in mind:

1. Good results at times are obtained in cases supposed to be cancer, but in which the nature of the condition has not been established on incontrovertible evidence. In such cases, the usual conclusion of the medical attendant is, *a priori,* that his diagnosis was wrong, rather than that a cure of cancer had been effected.

2. Sufficient time must elapse to judge the ultimate results. Temporary improvement frequently occurs after the removal of mechanical obstruction by operation or by sloughing of a cancerous growth.

3. Retrogression or even spontaneous disappearance may occur in cases of cancer, so that it is not uncommon to get considerable temporary symptomatic improvement apart from any treatment.

I should like to report a case which came under my observation, ten years ago, of a young woman, aged twenty-one, with a very large inoperable sarcoma of the neck. She had radium and *x*-ray treatment without effect. When she appeared to have but a few months to live her father took her to England. While walking on the deck of the ship during a storm she fell with great force, giving her neck a severe wrench. The slight increase in swelling which immediately followed was soon succeeded by a reduction in size, until at the end of a few months the tumor was entirely gone. It is now ten years since its spontaneous disappearance and there is no recurrence.

4. Psychic influences are of great importance. This aspect of the case has been well emphasized by Weil, as follows: "It is, indeed, very remarkable that a patient who has been consigned to death as a victim of a hopeless malady should regain his spirits and his appetite when he is again confronted with the hope of a cure and of the eradication of his disease? It is a phenomenon well-known to every student of the disease that a large proportion of cases respond in just this manner to any treatment which is offered them. Osler has described a case of cancer of the stomach in which the mere visit of a consultant of sanguine temperament, though poor judgment, whose assurance to the patient that there was no possibility of cancer, resulted in a disappearance of all the symptoms and a gain of eighteen pounds in weight. It is this psychic influence which has occasionally deluded the honest student of cancer cure and which has also so generously played into the hand of the dishonest."

The following are some of the therapeutic agents which have been advocated from time to time.

1. *Cancer Antisera.* Although a vast amount of labor has been expended on cytolytic sera it is now admitted to have failed in producing a therapeutic agent for cancer. The records of attempts to influence the growth of animal tumors by means of heterogenetic antisera are now quite numerous. In no instance has it been possible to determine that heterologous antisera prepared against tumors have a marked cytolytic effect *in vitro* or a curative action *in vivo.*

2. *Vaccination.* Experimental cancer research, thus far, gives practically no hope that human tumor can be affected by means of vaccination as a therapeutic procedure, (*a*) either by the injection of the patient's own fluids or (b) of ground-up tumors.

3. *Other Biological Methods. Doyen's Vaccine.* (*a*) Doyen, described a small coccus, which he named Micrococcus neoformans, as the cause of cancer, and from which a vaccine was prepared which he claimed gave 20 per cent. of cures. Under Sir Almroth Wright's direction the method was carefully tested in the Middlesex Hospital and found to be valueless.

(*b*) *Dr. Glover's Serum.* Dr. Glover claims: that he has isolated and cultured an intracellular organism which is found in every type of cancer. That he has produced a serum by injecting "a roan horse." That this serum renders animals immune to inoculation by cancer cells and will produce improvement or cure in cases of human cancer.

The claims of Glover are very similar to those of Doyen, whose vaccine as stated above was without value.

I was a member of the committee of the Academy of Medicine, Toronto, on the Glover serum. Dr. Glover refused to permit the committee to visit his laboratories to examine his cultures and experimental material, and it therefore had no evidence to substantiate Dr. Glover's claims on the experimental aspect of the question.

From the examination of cases and all available data the committee found no evidence that a cure had been produced by the serum in any case definitely established as cancer.

A number of cases treated by Dr. Glover's serum have been admitted into the various hospitals in Toronto, where portions of growths were removed and sections examined. These sections show no change in the cancer cells and no arrest of the growth. This is in striking contrast to the findings after the use of *x*-ray and radium, where the cells become vacuolated, etc. In addition to the above, we have seen a number of cases of cancer going on to a fatal termination after the use of Dr. Glover's serum since the Academy's report, confirming its findings and justifying the conclusion that Dr. Glover's serum is quite without value as a cure for cancer.

(*c*) *Cancroin* is the name given by Adamkieviez to a 25 per cent. watery solution of neurin, which is supposed to be identical with the toxic base of cancer. It was shown to be useless.

(*d*) *Antimeristem*, the name given by Schmidt to a culture of the supposed microbial agent of malignant tumors. It also appears to be quite valueless.

(*e*) *Coley's Fluid*: *The toxins of erysipelas and Bacillus prodigiosus.* Coley claims 10 per cent. of cures. If you balance against this the marked constitutional disturbance produced by the toxins, often with severe pain and (evident) shortening of life of the 90 per cent upon whose growth it produces no effect, it can scarcely be regarded as a remedy that can be rerommended even in inoperable cases.

X-ray. Cells exposed to the action of the *x*-rays become vacuolated, do not take the usual stains and the cell wall disappears. In a small superficial growth, such as rodent ulcer, the cells are penetrated by small round cells and leukocytes, which rapidly organize. Thus the growth slowly atrophies and disappears and is replaced by connective tissue. Around the normal edges an inflammatory reaction occurs. It is worthy of note that cancer cells of different types may be rodiosensitive in varying degrees.

The problem of *x*-ray therapy of cancer resolves itself into the administration of the correct dose in superficial cancer.

The roentgenologists are suggesting that a number of treatments by *x*-ray be given in cases of cancer *before* as well as *after* operation. I personally cannot see any advantage in delaying an operation for cancer for the purpose of preliminary radiation. After the growth is removed radiation is always employed and seems of value. Roentgenologists are also claiming to be able to cure superficial cancer, such as rodent ulcer and epithelioma of the lip. I take issue with them in recommending this as a substitute for operation. Why should treatments with *x*-ray or radium be continued for weeks or months when a ten minute operation will remove this superficial growth. In a superficial ulcer it is quite possible to get healing by the use of the *x*-ray and a conclusion be reached that the disease is cured, while at the same time some deep cells have not been reached and later manifest themselves as metastasis in the deep glands. Further, while the treatment of the superficial ulcer is going on, metastasis may be developing in the glands.

In deep cancer, x-ray may be used (1) as a palliative measure in inoperable cases; (2) as a prophylactic postoperative measure. Some roentgenologists are recommending and using a ray of much greater intensity and penetration. The risk of severe burning such as one has met with in the past is said now to have been overcome by the new technique.

Radium. Practically all that has been said in regard to *x*-ray applies with equal force to radium. Radium seems to have a special place in carcinoma of the cervix uteri. Our position in regard to the use of *x*-ray and radium should be made very clear. I take it that these methods are used only to supplement surgery and not to replace it.

Surgery still offers the best means of relief for cancer, and when the condition is recognized early enough a cure may be effected in a considerable proportion of cases.

A word should be said in commendation of the excellent work done by the Cancer Committee of the American Medical Association in helping to educate the public upon the paramount importance of seeking early advice in regard to any unusual lump or swelling.

References and Extracts

Creighton, C.: Some Conclusions on Cancer, 1920.

Ewing, J.: Neoplastic Diseases. 2 den Am. Jour. Roentgenol., 1918, v, 413.

Fibiger: Comptes rendus de la Société de Biologie, vol. lxxxiii, No. 10

Forcheimer: Therapeusis of Internal Diseases, 1914.

Imperial Cancer Research: Annual Report, 1920.

Janeway, H. H.: Am. Jour. Roentgenol., 1918, v, 414.

Lewin: Berl. klin. Wchnschr., December 29, 1919.

London Radium Institute: Annual Report, 1919.

Major, R. H.: Bull. Johns Hopkins Hospital, 1918, xxix, 223.

Murray, J. A.: British Med. Jour., October 30, 1920, 653.

Mottram, J. C.: Ibid., 655.

New, G. B.: Jour. Am. Med. Assn., 1918, lxxi, 1369.

Protherat: Bull. et mem. soc. chir. de Paris, 1920, 46.

Ribbert, H.: Deut. Med. Wchnschr., November 13-19, 1265.

Robinson, E. P.: Med. Rec., 1919, xcvi, 9.

Saberton: British Med Jour., 1918, xi, 337.

Smithies: Ochsner's Surgical Diagnosis and Treatment, vol. ii, 1921.

THYROID FUNCTION FROM A CHEMICAL VIEW-POINT

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IT is sometimes useful to be dogmatic. A crystallized statement rivets attention, and challenges contradiction. In such a statement an inaccuracy is more capable of detection than in those elaborate summaries of researches which are frequently perplexing by reason of the inconsistencies of their components. If there be no gross inaccuracy chemical data can be more usefully presented in such dogmatic form to that large body of clinicians who regard things chemical with at least dislike, if not loathing.

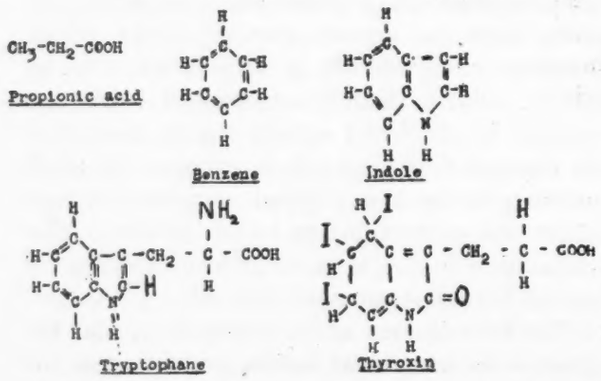
The chemistry of the thyroid gland and thyroid function has reached a stage at which one can reasonably hope to present the truth, and little but the truth, though we are perhaps some distance from a knowledge of the whole truth. The amount of work accomplished already is enormous, and any limited number of references is misleading since so many must be omitted. Our knowledge is based largely on the work of Baumann, Oswald, Marine, and Kendall. From the latter, in possession of unrivalled opportunities, we expect still more facts to complete our knowledge.

The thyroid gland differs essentially from every other mammalian tissue because it invariably contains distinct amounts of iodine, and because it elaborates at least two organic compounds containing iodine. Normal diet contains sufficient iodine for thyroid requirements. The element occurs in food almost entirely in organic combination. During digestion iodine is split off at a varying rate as iodide, and in this form circulates in the system and is excreted. Administration of iodine as iodine, iodised-protein, or iodo-fat results in a similar production of iodide, the only varying factor being the rate at which iodide is set free. It is extremely doubtful if any useful purpose is served by feeding iodine in any other form than sodium (or potassium) iodide (excluding, of course, thyroid itself, and thyroxin). Small quantities over a prolonged period will always produce greater effects than larger ones over short periods, since the greater portion of the iodine, however administered, is rapidly excreted as iodide. When distinct amounts of iodide are present in the blood certain tissues convert it to organic form; e.g., it is excreted in small amount in the hair. Blood normally contains about one part of iodine in ten million. This circulating iodine is a mixture of iodide and of the thyroid compound thyroxin.

The thyroid acts as an iodine-filter, and the greater the amount of iodide circulating in the blood, the greater is the iodine content of the gland when this is subsequently examined. The extreme limits of iodine in normal thyroids of fishes, birds, and mammals are 0.01 and 1.16 per cent. in desiccated tissue. The average normal amount in adult man is 0.2 per cent. in desiccated tissue, 0.04 to 0.05 per cent. in fresh tissue. The amount increases steadily during adolescence, is greatest between 30 and 50 years of age, and then decreases. This iodine is dis-

tributed throughout the tissue elements of the thyroid, and is not concentrated in the colloid. It is present mainly as *iodothyroglobulin,* a typical globulin soluble in one per cent. sodium chloride; this globulin appears to be elaborated by the cells of the colloid vesicles, and stored as the colloid or as one of its principal constituents. Iodothyroglobulin may amount to 60 per cent. of the dry weight of the thyroid gland. Its constitution is constant in different species, except for iodine content, which varies in different preparations from traces to 1.7 per cent. In view of the ease with which elementary iodine combines with proteins, forming compounds containing even seven or eight per cent. of iodine, we must regard it as extremely likely that the thyroglobulin is normally produced by the secreting cells at a constant rate, and that the amount of iodine combined in it is determined by the amount of iodine coming to the gland in the circulating blood.

The thyroid pours out into the blood-stream not the complex globulin, but the relatively simple compound *thyroxin,* an iodine derivative of the important amino-acid *tryptophane;* (beta-indole-alpha-aminopropionic acid); their relationship to each other, and to benzene, indole, and propionic acid are shown by the formulae:

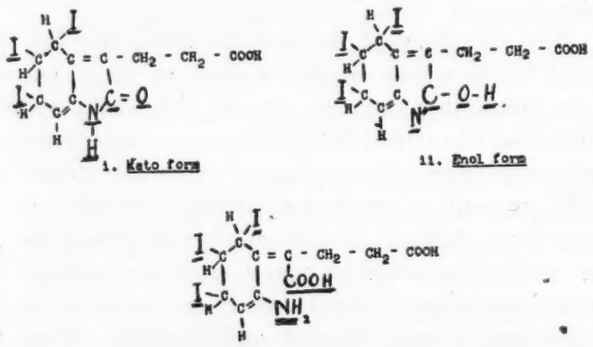


The differences between the molecular structures of tryptophane and thyroxin are shown by the larger type used for certain atoms.

Tryptophane is normally present in the circulating blood as a product of protein digestion. Normal diet invariably contains excess, part being broken down by bacterial action in the intestine to indole and skatole. It has been estimated that a man of average weight, living on an average diet, consumes 2.5 to 3 grams of tryptophane, in protein combination, per day, and that one-half of this amount would prove sufficient for his body needs. The thyroid has therefore always under normal conditions a sufficient supply of tryptophane for the manufacture of thyroxin.

The probable sequence of events is the building of the modified tryptophane radical into the thyroglobulin complex, and its subsequent iodization to a thyroxin radical; this is at a later period split off and passed into the blood stream.

When thyroid tissue is fed it is digested in normal fashion, and in the intestine is finally resolved into a mixture consisting largely of amino-acids and the *imino-acid* thyroxin. These are absorbed. Thyroxin given by the mouth is also in part absorbed unchanged, though a considerable proportion seems to undergo bacterial decomposition in the intestine and to be wasted. The net result of the continued administration of thyroid or thyroxin by mouth, or the repeated injection of thyroxin intravenously is the maintenance of a distinct amount of thyroxin in the circulating blood. Under these circumstance the thyroid enters into a resting condition in which the colloid vesicles are distended; the appearance of the gland is anaemic. In the young animal the gland ceases to grow at normal rate. It seems not improbable that the conditioning factor which deter-



mines the output of thyroxin from the normal gland is the amount of thyroxin in the circulating blood. Such a stimulus resembles to some extent that exercised by the glucose content of the blood in determining whether glycolysis shall proceed in the liver.

Thyroxin is a catalyst producing oxidation. Its activity is due to the presence of the linkage "-NH-CO-", dominated in the spacial arrangement of the molecule by the juxtaposition of three large iodine atoms. This linkage is easily

ruptured and reformed in thyroxin. The three important variations in the thyroxin molecule are shown in the following formulae, in which the important atoms of the molecule are shown in larger type, and underlined:

Thyroxin is not toxic in itself. Large single doses produce no toxic symptoms. But the presence of this catalyst in circulating blood and tissue-cells increases every oxidative process. Tissue catabolism increases. The circulating compounds of relatively small size that constitute the food-units of the tissues tend to be oxidised before they can be utilized. Basal metabolism and total metabolism are increased. In other words there are increases in oxygen consumption and in carbon dioxide and nitrogen excretion (with an accompanying increase in phosphate excretion). The injection of one milligram of thyroxin produces a two per cent. increase in the basal metabolism of a 70-kilogram man.

Thyroxin in normal amounts controls tissue catabolism. Thyroxin in amounts greater than normal produces undue tissue-destruction, and at the same time cell-starvation, and so acts as an indirect poison. Toxic results can only be produced by a prolonged condition in which there is too great a thyroxin concentration in blood and tissues. Under normal conditions the basal metabolism of any individual is constant within fairly narrow limits. When the thyroid functions subnormally and thyroxin output is decreased, the basal metabolism, the register of the minimal catabolic processes of the cells, also falls. Administration of thyroxin as thyroxin or as thyroid brings it back to normal, and it remains normal just so long as this administration is continued. Basal metabolism measurements will determine the correct thyroxin supply. For prolonged administration by mouth desiccated thyroid seems more suitable, although it is essential that the iodine content of such thyroid be known, since its thyroxin-effect will be approximately proportional to its iodine content. *Thyroid preparations differ in iodine-content over rather wide limits, and the iodine percentage should be stated.*

The conditions in myxoedema and cretinism (provided the cretin be treated at a sufficiently early age) can therefore be completely removed by continued thyroid administration, controlled, to produce optimum results, by occasional determinations of the basal metabolic rate.

Goitrous conditions are as difficult to classify from a chemical, as from a clinical standpoint. The simplest is *foetal adenoma* of the thyroid. In this the net result is a larger number of secreting cells, resulting in a simple hyperthyroidism. There is continued over-production of thyroxin, and consequently an abnormally high catabolism, revealed by a high basal metabolism. In *Graves' Disease* the function of the thyroid is disturbed by some factor outside the thyroid itself, and the resulting hyperthyroidism is only one of the effects. Thus the exophthalmos is not to be related to the disturbed thyroid function, but is a concomitant effect of the original disturbing factor. In Graves' disease the thyroid is actively hypersecreting. This hypersecretion may be due to the active hyperplasia, to an increased activity of the original cells, or to a combination of these two. The main effect of the original disturbing factor seems to be such an increase in the rate at which thyroxin is set free from iodothyroglobulin that the thyroxin cannot be properly stored. The amount of thyroxin extractable by chemical decomposition of such glands is small. The iodine content of adenomas is also below normal, indicating a similar, if less-marked change in thyroglobulin-thyroxin equilibrium.

Tryptophane cannot be manufactured in the mammalian body. It has been suggested that if the tryptophane supply be diminished by feeding a diet containing proteins that are free or almost free from tryptophane radicals (e.g., zein, or gelatine) the manufacture of thyroxin must be diminished, and that such treatment is therefore desirable in cases of Graves' disease. The suggestion is logical, but it does not provide a means of combating the original cause of the disturbed function of the gland, nor is it certain that the thyroid would not extract the remaining amount of food-tryptophane with a resulting tryptophane-starvation of other tissues. It is to be hoped, however, that this remedial measure will be tested. Such treatment as administration of iodine, thyroid, or thyroxin is obviously excluded.

The various types of colloid goitres are the most difficult of chemical interpretation. In the initial stages of such goitres the iodine content of the gland diminishes both relatively and absolutely. Iodothyroglobulin from such goitres contains less iodine. Since the colloid increases we must consider that the globulin is being

manufactured at a normal or at even an increased rate, but that iodine is not available or cannot be properly utilized to iodise the thyroxin radical. The hypertrophy may be a normal response to an iodine deficiency. A normal response, perhaps comparable, occurs in sheep, cattle, and pigs, at the onset of cold weather, accompanied by diminution in total iodine content and due to increased thyroxin output through the increased catabolism resultant on increased muscular exercise necessary to maintain body temperature.

In simple colloid goitres iodine administration in any form causes regression of the hypertrophy, and at the same time the iodine content of the gland increases. Iodine administration to growing children living in goitrous districts undoubtedly prevents the development of such goitres, whilst its use during the condition can be safely controlled by basal metabolism measurements, and so any development of hyperthyroidism prevented.

Colloid adenomas represent a series of graded conditions between the actively secreting foetal adenomas—producing increased basal metabolism—and the resting colloid gland which permits a normal metabolism.

A further careful study of a series of goitres, for iodine content, thyroglobulin content, if possible thyroxin content when some simple method of measuring thyroxin is devised, with concomitant macroscopical and microscopical examination, and careful clinical notes and basal metabolism measurements in every case before operation, will greatly increase, and perhaps complete our knowledge of the normal and pathological mechanism of thyroxin-manufacture in the thyroid.

I wish to acknowledge my indebtedness to Professor Wm. Boyd, of the Department of Pathology, University of Manitoba, who has helped me in my endeavour to obtain a clear mental picture of the various pathological conditions of the thyroid gland.

THE ACUTE APPENDIX

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THIS very familiar subject needs no introduction other than to state, that in referring to "The Acute Appendix," one has in view those cases where the clinical evidence points to definite and rapid pathological changes in and around the appendix, accompanied by septic absorption of infective products. The presence or absence of certain clinical features may aid in determining what those changes are, yet a true classification is difficult, except from the pathological findings at operation. One is chiefly concerned with the presence of, rather than the type of, pathological changes.

Case 1.—A girl of fifteen who had always been healthy and apparently well-nourished said that from Wednesday till Friday she had a very sore throat. That Friday night she felt pain in her abdomen above the umbilicus and was nauseated. On Saturday the pain became severe at times and was followed by vomiting. She felt a general abdominal tenderness. Late in the evening the pain settled in the right side over the lower quadrant and was so intense that she could not lie still and it never ceased, but by mid-forenoon Sunday was much easier. The vomiting had stopped during the night. Her right side was now so tender that she hated to move, even to straighten out her limbs. At 5 p.m. there was some distention and her temperature was 101 and pulse 120. 6 p.m.—operation,—Acute suppurative appendix.

The clinical features here included all the evidence one need expect. The tonsilitis was the predisposing cause and pointed to the source, the virulence of the infection, and the history shows its termination. These cases following tonsilitis rarely end in resolution. The value of this will be appreciated if one recalls that mild initial symptoms appear for

only a few hours in some instances, and after a period of two or three days of apparent recovery there is a sudden onset of symptoms of a most exaggerated type and the patient is in a very dangerous condition for operation.

Pain was the first evidence here. It is present in every case and is a warning that all is not well. It comes before any changes to the tissues. The organs of the peritoneal cavity are not sensitive to stimulations that produce pain externally, but reflexly pain is felt and it is this reflex pain that first points to the disease. It is colicy and intermittent at first and reaches its height in four to ten hours and is referred to the epigastrium or just above the umbilicus. Later it radiates to the right lower quadrant or in the direction in which the appendix may be pointing. It then becomes constant and is said by some to be a pain of "fixed posture" due to localized peritonitis, or to the stretching and contraction of unstriped muscle fibres in the wall of the appendix. By the third day the pain is less or even gone, indicating a resolution. On the contrary it may become severe due to invasion of peritoneal cavity outside localized area, indicating a spreading peritonitis.

Tenderness and pain are the two most reliable symptoms. It is also present in every case. It begins with a general abdominal sensitiveness, due to hyperstalsis of the small intestines, or may be localized from the beginning. This localized point of tenderness is the surest guide to the site of the trouble. It begins with a small area and spreads with alterations of the position of the inflamed appendix and its effects on neighbouring organs and tissues. The position of McBurney's point is approximately the same in all individuals, irrespective of the position of the appendix and results from reflex stimulations in the abdominal wall of the sensory nerves or the afferent part of a reflex loop. With this, motor fibres of this afferent part of the loop are sometimes stimulated, resulting in muscular rigidity and spasticity. This is not always present and is an unreliable factor in the diagnosis.

Nausea or vomiting, or both, may be present and occurs near the onset, i.e., within one to four hours. It is preceded by pain of the colicy type and is rarely due to localized pain. It disappears early or as soon as the peristalsis of the small intestines is arrested. The vomiting is never fæcal. Vomiting of blood does occur but it is exceptional. The symptom of nausea or vomiting is an important diagnostic feature but not always present.

Temperature represents the absorption of infective material in the appendix. It varies from 99 to 104. This latter temperature is exceptional and if occurring near the onset should make one suspicious of infectious and contagious diseases. A temperature of 99 to 101 may be considered typical. A sudden drop in temperature may be due to drainage into the cæcum with resolution to perforation or to gangrene. Along with temperature, as evidence of septic absorption is leucocytosis, in which a stationary white count and an increasing palynuclear count point to gangrene.

An early diagnosis of this treacherous disease is most important. It may be difficult or it may be simple. X-ray and some of the special examinations are contraindicated. The physical examination with the history of the onset and previous attacks if any, the age of the patient are the real factors in the solution. The examination of the abdomen will determine whether or not tumefaction is present, its character (and mobility) whether there is muscular rigidity and tenderness, (elicited by pressure or by suddenly relieving it) over right lower quadrant and its point of maximum intensity whether pressure over left lower quadrant causes distress in right lower quadrant; whether pressure along the outer border of ascending colon produces tenderness in that region; whether extending the flexed right limb with or without pressure over McMurney's point gives pain. A rectal examination must be made. Appendicitis is usually a disease of early adult life, yet no age is free. In one hundred of my cases, eleven occurred between the ages of five and ten; thirty-four between ten and twenty;thirty-one between twenty and thirty; sixteen between thirty and forty; three between forty and fifty and five between sixty and seventy.

Every case is a special or individual one demanding special solution, the more so the greater the remoteness from childhood. The type of the individual must be considered, whether or not he is of a nervous temperament, his ability to give a definite account of

his sufferings or whether he is trying to make light of them.

Case 2.—A man aged 47 at 10 a.m. complained of epigastric pain and, shortly afterwards vomited. During the day the pain became less but he felt slight tenderness in the right lower quadrant. At ten o'clock that evening he was sent to the hospital. Examination showed slight tenderness in right lower quadrant, temperature 98, pulse 58. Patient looked well and did not complain but expressed a desire to be operated on. Many cases present so little evidence of trouble or complain so little, that one hesitates to operate. Then some uncommon feature presents itself and aids the diagnosis. In the above case the pulse was a full bounding one. This, with the history and his desire for operation, made me think there was more serious trouble than the symptoms represented. Operation—gangrenous appendix. This subconscious feeling of impending danger is important and has some value in the diagnosis. Diagnosis is often difficult at the time of the onset or three or four days later when the symptoms are indefinitely mixed and the cause obscured. Sometimes in the beginning, the symptoms are attributed to some form of food and called indigestion or colic due to the nature of the pain. If the latter, there is no point of tenderness and pressure relieves instead of increasing the distress. In many instances a purgative is given with disastrous results.

Case 3.—A boy 8 years old complained of sudden severe abdominal pain, and vomited several times. It was attributed to food. After the vomiting he felt better and the pain was less. A dose of oil was given the next morning and that evening the pain appeared again, this time in the right lower quadrant, and so severe that he could not straighten up. Pulse 120. Temperature 102. Operation—ruptured appendix.

There are again cases with unexpected symptoms such as the ensuing history gives, symptoms due to the position of the appendix.

Case 4.—3 p.m. A boy sixteen years old was suddenly seized with severe pain in the region of the bladder and with a desire to urinate. He was nauseated but did not vomit. The next morning he felt quite well and got out of bed. 48 hours later severe abdominal pain and tenderness over right lower quadrant extending downwards. Rapid pulse and temperature; distention; rectal examination—marked tenderness right side. Operation,—ruptured appendix with tip against the bladder, large fæcal concretion and free pus in peritoneal cavity.

Sir Berkley Moynihan in his work on abdominal operations speaks of the positions of the appendix as follows:

(1).—Lying with its tip pointing towards the spleen and behind the termination of the ilium.

(2).—Hanging over the brim of the pelvis.

(3).—Lying in the iliac fossa with its end near Poupart's Ligament.

(4).—Lying along the outer side of the ascending colon.

(5).—Lying behind the cæcum and ascending colon in the retro-colic fossa.

One associates abdominal pain and tenderness in the right lower quadrant with the acute appendix because from experience we find it the most usual. Other conditions are confused with it. Acute intestinal obstruction, renal and ureteral calculi account for many mistakes in diagnosis. Time will not permit me to say much more, but in referring to obstruction the pinched facial expression and evidences of shock and the intense thirst should at least be a warning. With renal colic the patient tells us the pain started in the back and was shortly felt around in front of the abdomen and on down, also he gives us an account of hæmaturia and tenderness at the renal angle. In ureteral calculus the symptoms are much the same except that the starting point depends on the location of the stone. As this shifts so does the starting point. Very often the stone lodges at the brim of the pelvis and it is here that the symptoms resemble those of appendicitis. As to the treatment, nothing need be said. These are surgical cases and should be treated as such. If in the country, don't move your patient, but operate in the home and as early as possible.

FAVUS

A REPORT OF SEVENTEEN CASES

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THE following observations were made in a series of seventeen cases of scalp Favus seen in the Dermatological Clinic, and may serve to draw attention to the problem which Favus presents in Canada, to-day.

As the report covers a period of sixteen months, viz., December 1919 to May 1921, it is interesting to note the rapid increase in the number of cases seen. Previous to January, 1920, two cases were noted. During 1920, six cases, and in the first four months of 1921, nine cases. The increase directly corresponds with the greater number of immigrants entering Canada from Poland since the war. Of all the cases seen, only two were referred to the hospital by the immigration authorities.

All the children were of foreign origin—sixteen of Polish parents and one of Austrian parents. Two of the patients were born in the United States and one in Toronto.

The ages varied from five to seventeen years. The sex showed little variation, the disease being found in (8) male and (9) female patients.

The fungus responsible for the disease was demonstrated in (12) twelve of the seventeen cases.

Description.—According to Sequeira[1]. Favus is contagious and widely distributed, but is most common in the Eastern countries of Europe, in Asia Minor and in Egypt.

The part most commonly affected is the scalp, but it may attack the skin, the nails, and occasionally the mucous membrane. Cases of diarrhoea have been reported due to the infection of gastro-intestinal mucosa.

Children are most commonly affected, but, as it is difficult to eradicate, the affection is apt to persist to adult life. One seldom finds the scalp disease beginning after the age of fifteen years.

The inoculation takes place from child to child, but it may occur through contaminated brushes, clothes or hats, rarely, it may be transmitted from cats, dogs, rabbits, horses, cattle, fowl and mice.

Scalp.—On the scalp, the lesion is known as the scutulum, and consists of a small sulphur yellow disc with a central depression or cup usually pierced by a hair. The affection develops slowly, beginning as a superficial inflammation or merely a hyperæmic spot. There is soon noticed a minute yellow crust at the hair follicle and surrounding the hair shaft. The yellow crust increases in size—growing slowly to form the cup with a diameter about that of a small pea and slightly raised above the scalp. Removal of the cup shows a hæmorrhagic area.

The hairs are involved early, the mycelial threads growing down between the inner root sheath and the hair. They become brittle lustreless, and split readily. After a time, the crusts disappear from the earlier lesions leaving atrophic areas.

The progress is slow, months elapsing before there is extensive involvement. While the first patch increases, new foci appear at a distance in the scalp.

Ætiology.—The fungus which is responsible for at least ninety-five per cent of the cases of Favus in the human subject is the Achorion Schœnleinii (MacLeod)[2]. It is easily demonstrated by mounting scales and hairs in a few drops of Liq. Potassæ. The mycelium consists of narrow branching filaments; they vary in length and thickness and show round, oval or irregularly shaped spores. The hair shaft may be packed with mycelial threads. They are situated in the centre of the hair and lie parallel to the long axis.

Pathology.—The underlying corium shows

marked signs of inflammation, dilated capillaries, œdema, infiltration of lymphocytes and small round connective tissue cells. The change is the result of the toxic action of the fungus.

Differential Diagnosis.—The disease has to be distinguished from Ringworm, Seborrhœic Dermatitis and Psoriasis. From Ringworm, by the powdery scales and atrophic bald patches, the type of fungus and by the characteristic sulphur yellow cups. From Seborrhœic Dermatitis and Psoriasis of the scalp, it is distinguished by the crusts being friable, yellowish in appearance, and by the peculiar lustreless appearance of the hair.

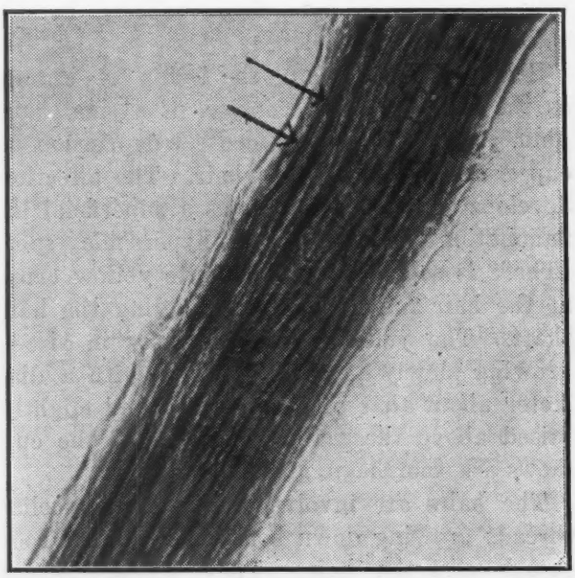

FIG. 1.—Mycelium of fungus in hair showing branched filaments. Enlargement made from microscopic specimen by W. L. Robinson, B.A., M.D.

Prognosis.—If left untreated, it may persist indefinitely, or may undergo resolution as a result of inflammation and cicatricial changes. This effect is well illustrated by the accompanying photograph.

Treatment.—We have tried various antiseptic ointments in treatment, but without success. The most efficient treatment is depilation by means of the X-ray as in Ringworm. A cure can be effected in from four to five weeks. While the hair is falling, an ointment should be rubbed into the scalp—the most effective being Ung. Hydrarg. Amm. Any septic condition such as Impetigo is likely to be much aggravated, and should, if possible, be eradicated beforehand, as the X-ray temporarily reduces the vitality of the scalp.

The Technique of depilation as carried out at the Hospital, is that of the Kienbock-Adamson Method with slight modifications. (Adamson)[3]. It is by no means a difficult procedure but it requires the utmost care and attention to detail, so that we have refused as yet to entrust it to the hands of a technician. As, however, it requires the undivided attention of the operator for one and a half hour's time, this is a rule which we cannot hope always to enforce. Fortunately, the margin of safety between a dose which will give an incomplete depilation and that which produces a permanent one is reasonably large, so that scrupulous care with a standardized technique carries with it very little danger of unfavorable result.

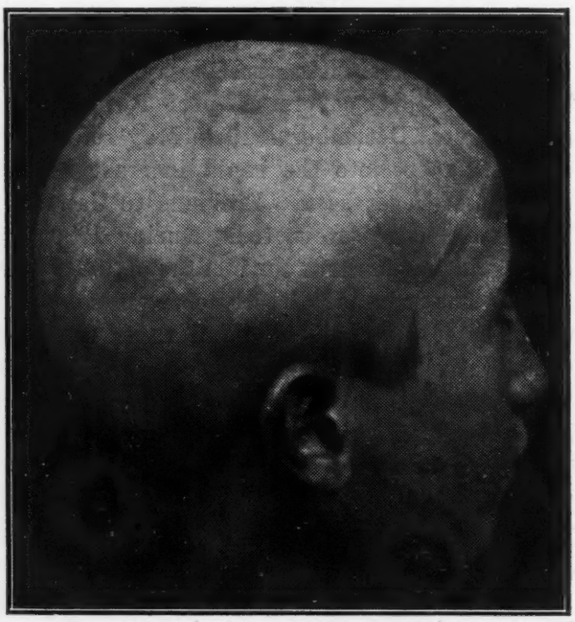

FIG. 2.—Depilation produced by X-ray.

Before the treatment is attempted, we insist that all irritating applications such as iodine or other strong antiseptics shall be discontinued for at least two weeks, although we make no objection to the use of a very mild ointment sufficient to lessen the danger of spreading the infection to others and to keep the crusts from becoming too thick and troublesome. Immediately before treatment, the hair is cropped as short as possible and all crusts carefully removed. The head is then marked with a skin pencil as follows: A point is chosen in the frontal region about one inch above the hair margin, in the mid-line. Measuring backwards from this with a piece

of bandage ten inches long, we mark a similar point in the lower occipital region, while half way between these two points we obtain a third point, on the top of the head, which will be exactly five inches distant from each of them. Lastly, a point is found on each side of the head about an inch above and a little anterior to the external auditory meatus which is likewise five inches distant from each of the first three points. This may prove somewhat difficult in heads of unusual shape, but can generally be managed by altering your point of departure and remarking the five points in turn. All of these points are now joined by lines which will cross at right angles. These serve as a guide for the direction of the rays.

FIG. 3.—Same patient six months after depilation.

The patient is then placed in a sitting or reclining posture, according to the area to be rayed, with his head held steady in some form of retaining apparatus, and each area given a depilating dose in turn, all exposed portions of the face and neck being covered with lead foil or other ray-proof material. If the central rays are directed perpendicularly on each of the five points in turn, from a target-skin distance of six and one-half inches, and the oblique rays of the several exposures allowed to overlap at will, every part of the scalp will receive the required dose with mathematical exactness.

It will be readily seen that these two factors, the target-skin distance and the direction of the rays, are of the first importance and require great care in adjustment. To facilitate this, Dr. Adamson invented a small wooden tripod to reach from the tube-holder to the patient's head, but we have found this unsuited to the present day American type of apparatus and have discarded it in favor of a pointer made by embedding a short pencil in a small plaster-of-paris cone which will fit snugly into the smallest conical diaphragm or "treatment-cone" of the tube-stand. This, cut to the required length, will give the exact distance required, when the tube holder is lowered until the pointer just touches the head. Moreover, by the usual manipulations of the tube-stand, it can be made to point directly at the required point, and simultaneously in the plane of each of the intersecting lines, thus giving a true perpendicular with great precision. This pointer, together with the "treatment-cone," can then be removed without disturbing the position of either the tube or the patient, and the treatment proceeded with.

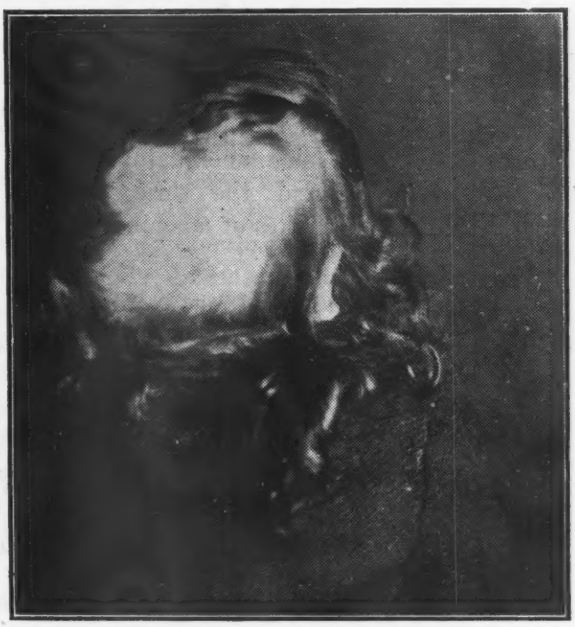

FIG. 4.—Baldness due to scarring in patient not treated by X-ray.

A target-skin distance of six and one-half inches, as called for by the Kienbock-Adamson

method, has also proved awkward when one is working with American apparatus, as it brings the metal tube-holder too close to the patient's head, thus introducing a very real danger when one is dealing with children, unless every part of the patient's body is strapped securely to the table; which is otherwise unnecessary. Hence it has become a common practice on this continent to make target-skin distance either eight or ten inches and increase the exposure accordingly. Our own practice hitherto has been to use a ten-inch distance, which has worked very satisfactorily, but we consider eight inches to be preferable, as giving more exact dosage to the overlapping areas and we intend to standardize on that in the future.

The actual dose which we have been giving to each area has been five milliamperes at a six-inch gap for two and a third minutes at a ten inch distance, the spark gap being measured across moderately sharp terminals. No filter is used. This dose, we have checked up by means of Sabouraud pastilles and found to be equal to four-fifths B tint viewed through a tintometer. For some unexplained reason, however, we have found the dose to vary slightly on different makes of machines, so that it is advisable to standardize the work on one machine and stick to it. In very young or very fair patients we lessen the dose a little.

The hair usually begins to fall at the end of two weeks and depilation is complete in about three weeks. A new growth of hair is generally visible over all parts of the scalp in six or eight weeks' time and in four or five months' time is quite thick and well grown.

Conclusions

1.—In Canada, Favus is found chiefly in immigrants from Poland.

2.—It would be advisable for the Government to take stringent precautions to prevent such cases entering Canada except on condition of their reporting to hospital immediately for treatment.

3.—Early diagnosis is essential in order to prevent patchy baldness by cicatrix formation.

4.—Depilation by means of the X-ray offers a successful method of treatment.

References

1.—Sequeira, J. H. Diseases of the Skin 1919.
2.—Macleod, J. M. H. Diseases of the Skin 1920.
3.—Adamson, H. G. Technique of Depilation. (Lancet 1909, p. 1379)

INTUBATION VS. TRACHEOTOMY

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THE general practitioner is frequently brought face to face with the necessity of deciding rapidly what he must do to relieve failing respiration, in those cases of dyspnoea resulting from membranous croup. The choice usually lies between two operations, intubation and tracheotomy. Which shall he choose and what are the prospects for relief from the terrifying situation which confronts him? For many years now the growing tendency has been to advise intubation and discourage tracheotomy. In a properly equipped isolation hospital with a thoroughly trained surgeon constantly at hand, no one would deny that intubation would be the operation of choice. Unfortunately it is not possible to have a large portion of the cases met with in general practice treated in such favorable surroundings, as many towns and rural districts are not provided with such hospitals. It thus becomes necessary to operate in the patient's home, often with few or no conveniences, without assistants and with very poor light. Under such circumstances what is the operation of choice? Should the operator be fortunate enough to have special training in intubation it might be advisable for him to

undertake this operation in preference to tracheotomy. With conditions as I have mentioned it is not easily performed, in fact it is one of the most difficult of the minor operations and when you take into consideration the fact that the tube is likely to be coughed up at an inopportune moment when no physician is present to re-insert it, it is often a question whether or not one is justified in performing it. It is also a well known fact that in certain cases of low involvement of the trachea the tube does not reach far enough down to give relief, and lives have been lost in this way, as not enough time was left to do a tracheotomy. Unfortunately there is a large number of competent physicians and surgeons in both towns and cities who have had no special training in intubation, and in such cases the attempt is more than likely to be unsuccessful. In the Municipal Hospital for Contagious Diseases, Chicago, the mortality in Intubation cases was reduced from 50.4 in 1918 to 15.6 in 1920 by the insistence on greater efficiency by staff. In cases of this description I am of the opinion that tracheotomy is a much safer procedure and will result in saving a far greater number of lives than would result from the attempt at intubation. Every physician who is not fortunate enough to have at hand a confrere who is competent to perform an intubation should be capable at least of performing a tracheotomy in any emergency and it is with the idea of impressing the members of the medical profession with this necessity that I am taking the liberty of drawing your attention to this subject today. Every man in a general practice ought to have in his mind accurate details of the operation for tracheotomy and should be able to perform it accurately and quickly without any trained assistants. With the idea of refreshing your memories as to the details of this operation may I quickly review its main points and the dangers which one is likely to encounter. In the first place where a patient, usually a child, is suffering from dyspnoea from membranous croup a general anaesthetic is out of the question. Two dangers may be mentioned. Asphyxia is almost sure to result from paralysis of the accessory muscles of respiration, and secondly aspiration pneumonia is likely to occur from infected blood, pus or secretions being drawn into the lung because of the abolition of the cough reflex. Local anesthesia can be quickly and satisfactorily produced by the intradermaticnot hypodermaticinjection of 1-10 of 1% cocain solution made preferably from normal saline. We were formerly advised to divide carefully the tissues layer by layer on a grooved director. This is a waste of time and quite unnecessary. The skin and subcutaneous cellular tissues should be divided in the middle line with one stroke of the knife, this incision should extend from the thyroid notch to the suprasternal notch, the incision being a shallow one. The subcutaneous tissues should then be divided after being clamped. The trachea should be laid bare at its upper part first and then followed downwards. The isthmus of the thyroid may be drawn up or down as is most convenient and we are now ready for the incision in the trachea. In children some difficulty may be experienced in keeping the trachea from slipping to one side of the knife while being incised. I have found it of great assistance to steady the trachea with a hook inserted into it. Care should be taken not to pass the scalpel too deeply lest the posterior wall should be injured and the oesophagus wounded. It is wisdom to control all hemorrhage before opening the trachea. By this means little difficulty will be experienced. The trachea incision should include at least three rings, and, except under special circumstances, should never be higher than the second ring. If the operation be performed at a higher point than this laryngeal stenosis may be produced by approaching too closely to the subglottic tissue, which is quite subject to chronic hyperplasia.

The edges of the tracheal wound are now held open and the canula of the tracheotomy tube inserted. Care should be taken not to stitch the wound too closely to the tube. The opening above and below may be lightly packed with gauze which should be fastened to the retaining tape with safety pins. These retaining tapes should be of the best linen and should not be *tied* to the canula as there is danger of their slipping. A slit should be made near the end of the tape and after slipping the perforated end through the slot in the tape plate the distal end is passed through the perforation and thus made secure.

While every case of tracheotomy for membranous croup may be said to be an emergency, there is usually sufficient time to permit of the

leisurely operation described above. Occasionally, however, a case presents itself which is so acute that the breathing is impeded, and it is evident that unless immediate relief is obtained death will result. In cases of this type an emergent operation should be done.

Formerly a simple stabbing of the cricoid membrane or trachea was advised but so many accidents followed that the method has been pretty generally abandoned. A rapid and comparatively safe method may be described as follows: with the forefinger and thumb of the left hand the soft parts including the jugular veins and carotid arteries may be pressed back and the trachea brought into prominence. With the first incision exactly in the middle line the skin and soft tissues are divided down to the trachea. The next incision opens the trachea which is steadied by firm pressure of the thumb and finger. After locating the rings of the trachea with the finger, the finger is moved slightly to the left and the scalpel carried down close by its side to the very centre of the tube. No attempt is made to control hemorrhage and consequently the operation after the first incision must be done by means of the sense of touch. After breathing has been established bleeding may be leisurely controlled. The main points to remember in the operation are that the centre line is the area of safety, the higher one goes the wider this area; the upper limit is the thyroid notch while below it narrows to the vanishing point. After the trachea is reached the line of safety falls below the second trachea ring.

UTERINE HÆMORRHAGE FROM THE VIEWPOINT OF THE GENERAL PRACTITIONER*

F. A. L. Lockhart, M.B. (Edin.) M.D. (McGill)

CHRONOLOGICALLY, haemorrhage from the female sexual organs may be divided into that of youth, middle and old age, but certain forms may be met with at any time. It is one of the most important symptoms occurring in gynaecological practice, or, in fact, in the every day work of the general practitioner, as upon the correct diagnosis of the cause may depend the life of the patient.

The sexual life of the female is ushered in by the appearance of a bloody discharge at the vulva. The young girl, of about fourteen years of age in this country, has been irritable and nervous with a certain degree of lassitude for some weeks. She suddenly discovers a spot of blood on her under garments, this blood gradually increasing in amount for a few days and then slowly ceasing. It is her first menstrual period, heralding the dawn of womanhood. Normally, this recurs periodically each month, but at times the flow becomes excessive or is seen too frequently, in which case the condition is pathological. This excessive blood loss may be due to some one of various causes, such as excessive ovarian activity, general ill-health, psychological conditions, uterine growths or disease of the endometrium. Each variety calls for a diagnosis of the cause and for appropriate treatment, but it is often extremely difficult to differentiate the one from the other.

Excessive ovarian activity may be lessened by change of environment, habits or diet. If a girl's mode of life brings her into close contact with members of the opposite sex, as for example where she works in a factory with males, change of occupation will be useful. Her literature ought to be examined into, as some of the novels which, unfortunately, come into the hands of the young, are liable to direct their minds towards sexual matters. Her food should be nourishing but non-stimulating, her diet, both mental and gastronomic, being in need of dilution. Where she is thin, pale and evidently outgrow-

*Read from the Vermont State Medical Association October, 1921

ing her strength, the condition demands good food, plenty of exercise, fresh air, especially at the sea-shore or in the mountains, and tonics, but never any preparation containing iron during the actual flow, as this only increases the blood-loss. If there is any cause for worry remove it and you will frequently be rewarded by a marked improvement in the condition. Total cessation of study may be necessary, but her mind must, at the same time, be kept occupied, so that introspection may be prevented. In such cases, one should study the individual and treat her rather than the actual symptom

Of uterine growths, the one to be most dreaded, and therefore to be most carefully sought for, is sarcoma, as this disease is more prone to attack the young than the more mature. Where it is present, you will have rapid emaciation, a local enlargement of the uterus and a sanguinous discharge of a watery nature and containing hard, rice-like particles, thus producing the well-known "rice-water" discharge. A polyp or sub-mucous fibroid is not commonly met with in these very young girls, but one does see them occasionally, and then they call for removal of the growth. In the case of the sarcoma, of course, one should make a clean sweep of the pelvic contents, removing not only the uterus but both sets of appendages as well, on account of the extreme virility of this form of tumour. One case which came under the observation of the writer many years ago strikingly illustrates the above. The patient was a young girl, twenty-two years of age, who was admitted to the wards of the Montreal General Hospital complaining of a thin, watery discharge, which was stained with blood, and an abdominal swelling. Sarcoma of the ovary was diagnosed and a large sarcomatous tumour of the left ovary was removed. She made an uneventful recovery from the operation but within six weeks she returned with a recurrence so extensive as to be beyond hope of obtaining a good result from further surgical interference. This taught a lesson which has probably saved the lives of several future patients.

In a few cases, there is an hyperplasia of the endometrium, in which case drugs will be of little benefit and curettage will be indicated, but, especially in the young unmarried girl, this should be reserved as a last resort. Where it is necessary and the tissue removed is examined, you will usually see that the endometrium is more or less thickened and that its vessels are greatly increased both in number and size. To actually stop the haemorrhage in these juvenile cases, and in many occurring in older patients, certain animal substances and various drugs may be used. Normal horse-serum may be injected deeply into the muscles, preferably of the buttock, in doses of 15-25 cc. and this may be repeated twice a day for two days. Extract of the mammary gland is sometimes exhibited in doses of five grains thrice daily after food; this is supposed to have the effect of stimulating the uterine tissue to contract. The administration of the latter substance ought to be commenced two or three days before each period and continued until it has produced the desired result, or, at all events, for two or three days. If it is decided to use actual drugs, a combination to be recommended is one of calcium lactate, ten grains, with one grain of ergotine. Place these in a capsule and instruct the patient to take two capsules as a first dose and then to take one every four hours for four doses. Calcium lactate, if continued indefinitely, loses its effect, so that not more than four or five doses ought to be taken without an intermission of at least twelve hours. Cotarnin hydrochlorate, sold under the trade name of "stypticin," in doses of $\frac{3}{4}$ gr., three times a day or even every four hours, will frequently be found to be very beneficial. The fluid extract of ergot, in combination with strychnine in small doses continued for some days or weeks, is to be recommended in some instances.

In addition to local causes, menorrhagia and metrorhagia, in females of any age, may be produced by diseases of the general system. Syphilis causes them by producing a large soft unhealthy uterine muscle, greatly lacking in tone, so that some cases of obscure origin will be found to respond to anti-syphilitic remedies. Any condition producing an obstruction to free circulation of the blood may produce uterine haemorrhage. This is seen in diseases of the heart, kidneys and liver, and the possibility of such affections being present must always be carefully considered and examined into before deciding that, just because the patient is a woman, the bleeding is of uterine origin.

Uterine haemorrhages of established adult life and middle and old age have similar causes and so will be considered together, although in the earlier years inflammatory conditions and pregnancy are more frequently met with than later on. Occasionally, inflammation of the appendages produces such a degree of pelvic congestion that the vessels of the endometrium break down,

causing more or less profuse bleeding. It will often require care to differentiate this condition from extra-uterine pregnancy, but in the inflammatory case the patient has a higher temperature than in gestation, the pulse is fuller and more bounding and there may be an history of some previous infection. There will also be an increased leucocytosis, although a moderate increase in the white cells is sometimes observed in the case of a pregnant tube. This is, however, the exception. The indication here is to reduce the inflammation and when this has been accomplished the bleeding will cease. On no account should curettage be resorted to in such a case, as this would only result in not only spreading the infection locally, but, possibly, in a general systemic poisoning.

When extra-uterine gestation is present, accompanied by external bleeding, the latter is of a special type. The patient may or may not have missed one or more periods and then have seen a slight reddish discharge at the vulva. This is usually small in amount but recurs every day and is often described as a "dribbling." The haemorrhage in this instance comes partly from the engorged endometrium and partly from the tube of the affected side, either from simple engorgement of the lining or from minute lacerations of the tubal wall caused by the enlarging ovum. The diagnosis may be made from the history of amenorrhœa, pain in one illiac region and the presence of a mass in the affected side. Even where there has been no irregularity of menstruation, bleeding, such as has been described above, should always lead one to strongly suspect the presence of an ectopic pregnancy and the patient should be kept under constant observation. The actual haemorrhage will not require treatment but the affected organ must be removed, this causing the bleeding to cease.

Some tumours of the ovary cause uterine blood loss but the case is readily diagnosed by the discovery of the growth, the removal of which is followed by the disappearance of the symptoms.

Chronic inflammatory conditions of the uterine tissue, either of the muscular wall or its lining membrane, may produce a discharge of blood from the organ. This metritis or endometritis is frequently caused by lacerations of the cervix or displacements of the fundus in either a backward or downward direction, which will also keep up the congestion of the tissues. In such a case, the uterus will be found, upon pelvic examination, to be retroverted and low and to be extremely hard. The walls are thickened, producing an enlargement of the organ. At times, this goes on to a greatly exaggerated development of fibrous tissue in the organ, giving rise to the so-called "fibrous uterus." The cervix is hard and may have excoriations on the surface, which may bleed on irritation. Much benefit will result from conscientious and persistent local treatment, seeking to elevate and deplete the organ and so cause absorption of the pathological elements. Even if one decides to operate on the cervix at some future time, this treatment will render the parts much more pliable and will produce a better result. Some practitioners are inclined to rather scoff at this method and make little of it, but they will usually be found to be men who have not carried it out correctly, as it requires both time and patience on the part of the physician and patient. It will, however, almost work miracles at times. The patient requires three treatments a week. These consist in exposing the cervix and fornices by means of a speculum and wiping away all discharges from the exposed areas, to which Churchill's tincture of iodine is thoroughly applied. A small tampon, saturated with boroglyceride, is inserted as high as possible and held there while the speculum is withdrawn. This tampon is retained for about thirty-six hours, when it is withdrawn and a warm douche, of at least two quarts of any mild antiseptic, is taken in the recumbent position and with the douche-can not more than three feet above the level of the patient, as what is required is the prolonged application of moist heat to the pelvis through the vaginal roof. The douche is repeated the next morning and the patient returns for a repetition of the former treatment. These applications ought to be continued for at least one month before despairing of their efficacy, at the end of which time a curettage, with or without further surgical measures, may be done. During the treatment, the patient should abstain from all causes of pelvic congestion, such as sexual intercourse, constipation, etc.

Time does not permit of consideration of uterine bleeding during the later stages of ordinary intra-uterine pregnancy but threatened and inevitable abortions come quite within the scope of this paper, the differentiation of the simply threatened abortion from one which cannot be prevented and the appropriate treatment of each being of the highest importance. When a woman who is, for example, three months pregnant

sends for her physician who finds that she is having a loss of blood from the uterus, what is he to do? First, is the abortion preventable? If she is losing a large amount of blood, is suffering from rhythmic pains and has a dilated external os, there is little hope of saving the ovum. In such a case, the best treatment is to pack the vagina thoroughly with strips of gauze under the very strictest aseptic precautions, and by "packing" is meant *packing*, not simply placing one or two strips of gauze loosely in the vagina. Commencing with the posterior fornix, fill that and then place folds all around and over the cervix, filling every part of the passage so that pressure on the urethra at times necessitates catheterisation of the patient. This pressure will not injure the urethra on account of the natural elasticity of the gauze. It frequently follows that pains are set up in from twelve to eighteen hours and the whole ovum will be found on top of the gauze when this is removed. The administration of ½ cc. of pituitrin, injected intra-muscularly, is often useful, or else some preparation of ergot may be tried. Repetition of this treatment two or three times, with twenty-four hours' interval, may be necessary before the desired effect is produced. If this fails, dilate the cervix and remove the ovum with the finger, after which the membranes may be gently scraped away by means of gauze on a forceps, finally giving an intra-uterine douche of any mild antiseptic. If there is any uterine sepsis and the abortion is incomplete and accompanied by a foul discharge, the following is a good example of the method to be recommended. The patient was a married woman, thirty-six years old, seen on October 1, 1921. One period had been missed and she had only flowed slightly for one day during the previous one. She had no idea that she was pregnant. Ten days after the period was due, she began to flow and continued to do so until coming under observation. On admission to a private ward in the Montreal General Hospital, her temperature was 103, pulse 120 and her respirations were 18 to the minute. She had experienced several chills during the day. Examination revealed slight tenderness over the right uterine cornu and a foul blood stained discharge. The cervix was patulous and the fundus the size of a three months pregnancy, very flabby and soft and retroflexed. The vagina was packed and the patient placed in the Fowler's position in bed with ice on the lower abdomen. Next morning the packing was removed and an antiseptic vaginal douche given. No change in the condition of the cervix was discovered, so the packing was renewed. Her temperature and pulse had improved. The same line of treatment was carried out on the 5th, but, as there was no change on the following day, the cervix was carefully dilated and the uterine cavity douched with a solution of formaline, 1-5000, the fluid, aided by stretching the cervix by ovum forceps, bringing away considerable detritus. The interior of the uterus was wiped clean by means of absorbent cotton on forceps, the cavity explored by the finger and a small intra-uterine douche, at 115, was given to produce contraction of the uterine muscle. This was further encouraged by bimanual massage and intra-muscular injection of pitruitin. These measures proved effective. The patient's pulse and temperature became normal the next day and remained so until her discharge from the hospital. Where, on the contrary, the haemorrhage is slight, and the pains feeble one may prevent further trouble by rest in bed and absolute quiet, giving mild sedatives, such as heroin, gr. 1-10 hypodermically as required. If the fundus is retroposed, replace it and retain it in position for three or four months, until the uterus has risen out of the pelvis, by means of a pessary, which, if properly fitted, will not interfere with the gestation.

As a woman advances in years, a correct diagnosis becomes increasingly important, as she is most prone to have malignant disease of the cervix or fundus between the ages of thirty-five and forty-five, and therefore all women at that time of life, who come complaining of haemorrhage, even the slightest, from the genital tract, ought to be most carefully examined as to the condition of the pelvic organs. This is especially true after the menopause has become regularly established. The specialist so frequently sees women who have suffered from genital haemorrhage for months and whose medical attendant has failed to examine the condition of the pelvic organs, simply because it was repugnant to the patient. By this neglect, he often fails to recognise malignancy until it is too late to hope for any permanent relief and so incurs a most heavy responsibility.

The two most common causes of uterine haemorrhage at this age, i.e. between thirty-five and forty-five, are carcinoma and fibroid tumours, and the character of the discharge in appearance, duration, onset and mode of cessation will often be of the greatest help in coming to a conclusion as to the malady from which the patient is suffering. In fibroids, the blood comes

from the vessels of the endometrium and is due to increased congestion. Consequently, it appears gradually, is fairly dark in colour and ceases gradually, as the degree of ovarian stimulation rises and wanes. In cancer, however, it is due to actual destruction of tissues by advance of the disease. The vessel wall is perforated, suddenly setting free a jet of bright red blood if the vessel is an artery, or darker if a vein has been attacked. This bleeding goes on until the entire circumference of the vessel wall has been destroyed, allowing the coats to retract and so assist the blood to coagulate and close the opening. If the patient has a fibroid with haemorrhage, this excessive bleeding manifests itself first simply as an excessive flow at the period, which becomes more profuse and prolonged as time goes on. In malignancy, on the contrary, it appears irrespective of menstruation whenever a vessel is eroded. A typical history obtained from a patient with uterine cancer is that she has been perfectly regular up to her last period, but that lately she has noticed a slight spot of blood at the vaginal orifice after her marital relations or she has been to the closet. Or the same symptom may be noticed after the menopause has been established for months or years. In such cases as these, a local examination of the pelvic organs will usually reveal the presence of a small patch of ulceration or a hard nodule, over which the mucosa is reddened, on the cervix. Of course, if the disease is located inside the body of the uterus no local manifestation will be seen or felt. Where there is an excoriated patch on the mucosa covering the cervix, it must be borne in mind that it may be due to simple, non-malignant inflammation. The diagnosis can be made in one of two ways. The first, and much the best, is to take a section right through the whole thickness of the cervix and have it examined by an expert pathologist. The other is to treat the condition locally by the application of iodine, the insertion of tampons and the use of a douche. If the cause is inflammation, it will clear up or, at least, show some improvement in ten days or two weeks, whereas if carcinoma is present but little change will be effected.

Finally, elderly women frequently have minute haemorrhages from either the vagina or uterus. simply from the fine arterioles breaking down, One may be able to feel or see absolutely nothing, in which case the condition will soon clear up under hot douching with some styptic solution, together with the administration of small doses of ergot.

There is one more instance of uterine haemorrhage which deserves notice. A woman has been delivered of a full term child or, more likely, of an hydatid mole. Nothing particular is noticed at the time of labour but, shortly after delivery, the woman complains of vaginal haemorrhage. You examine the vagina, cervix and fundus and can make out nothing more than some enlargement of the uterus. The bleeding withstands all forms of medication and you are driven to use the curette, which brings away but little tissue. The haemorrhage is checked for, possibly, a couple of weeks but then returns and you are again forced to curette. The scrapings are examined and the pathologist reports that there are no signs of malignancy in the specimens. Again there is a recurrence of blood-loss and now the woman shows signs of failing health. The above history is typical of chorio-epithelioma and the quicker the uterus is removed the better it will be for the patient.

The following cases may prove of interest as illustrating some of the above conditions.

1. Mrs. S. aged 41 years,a unipara, was admitted to hospital on February 29th., 1921, complaining that she had suffered from a watery discharge from the genitals, brownish in colour, since the previous November. Her sexual history was negative, the periods being regular and her one labour was natural. Her general health was good and there was no sign of any cachexia. Her mother had died of "cancer of the face." Local pelvic examination revealed the presence of a thin watery discharge and a cauliflower mass attached to the cervix. The fundus felt healthy and the uterus was freely movable. The whole uterus was removed through an abdominal incisicn, a ring of vaginal wall being closed over the cervix by right angled clamps before the vagina was cut into. The specimen removed showed that the cancer had spread upwards to just beyond the internal os and that it was surrounded on all sides by healthy tissue, thus holding cut a good prospect of a permanent cure.

2. The next case reveals a tragedy. Mme. St. M., aged 30 years, was first seen on May 16th, 1920, at which time she complained that she had lost a little blood each day for the past three months. For the last two months she had felt pain in the left leg and inguinal region, especially when she attempted to lie on that side. There had been some loss of flesh.

In the previous November, i.e. about seven months before admission, she was delivered naturally of a full term child and made a good recovery.

Her first period after confinement was at the end of January and was preceded by a white discharge. She menstruated regularly in February and March, but lost a little blood every day between the periods. Her family history was negative as regards cancer. The patient was a large, well nourished woman but was pale, and cachectic. Examination of the genitals showed the perineum to be lacerated and to be bathed with a reddish discharge which had a slightly disagreeable odour. The cervix was very bulky, filling the whole upper part of the vagina and inclining to the left. Its surface was rough and broke down easily under manipulation.

Of course there was no difficulty in diagnosing the case as one of epithelilma of the cervix which had spread too far to justify any attempt at removal, but the diseased area was very thoroughly cauterised and the patient was sent home in four weeks. She died six weeks later.

This woman had been confined in a small country village and had not been examined by her physician after labour. It is very doubtful if anything would have been discovered if she had been, as the disease at that time was probably very embryonic. It was a very rapidly growing type of cancer and her youth, 30 years of age, coupled with the uterine congestion consequent upon pregnancy would favour the extremely rapid spread.

The next two cases present similar signs and symptoms but the causes were vastly different.

3. Miss C., aged 67 years, was first seen on February 24th., 1921. At that time, she complained that there had been a pinkish uterine discharge for the previous six months but that there had been no disagreeable odour at any time. She had not suffered any pain and, although she was very tall and thin, there had been no loss of flesh. Her skin was pale but she looked as if she never had much colour and she informed me that such had been the case. There was nothing the matter with her heart, lungs, liver or kidneys and she had no cancerous family history. The hymen was present, the orifice being very small. The fundus was felt, per rectum, to also be small and a diagnosis of a small intra-uterine polyp was made. The patient was curetted the day after admission and the diagnosis was confirmed by the removal of three tumours, but I regret to say that they were not submitted to microscopic examination. The discharge returned soon after going home and continued until her re-admission on September 22nd of the same year. There still was no odour, pain, loss of flesh or cachexia but it was determined to remove the uterus, which was done through an incision in the anterior abdominal wall. On cutting it open, the organ was found to contain some broken down tissue stained with blood and at the upper part of the anterior wall, and spreading towards the right, was an area of undoubted cancer.

The following is the report on the uterus of Miss C., of Dr. J. L. Rhea, who kindly reported on all of these cases for me.

The whole uterus measured 8½ cm. in depth, the cervix being a little longer than usual. In the body of the uterus, and projecting into its lumen, is an irregular rounded mass, 5 x 3½ cm., which is elevated above the mucous membrane from 3-8 mm. The margins are slightly overhanging but the edge is well demarkated from the mucosa. The surface is irregular and presents a granular appearance with a varying colour, that predominating being a pale yellow with small pink patches, the latter marking the presence of fine vessels. Section shows the wall to be deeply infiltrated with cancer cells but none have reached the peritoneal covering of the uterus. Outside of the larger mass, and separated from it by an area of smooth and apparently healthy mucous membrane, is a smaller mass of similar tissue and appearance, measuring 1.5 cm. by 8 mm. This is a rare condition, being evidently a nodule of cancer implanted secondarily from the first.

4. Miss S., aged 55, was first seen in January 1920. She had been losing a little blood stained discharge since the previous September. There was neither cachexia nor loss of flesh but the discharge had a slightly disagreeable odour. Her mother had died of cancer, the location of which was not known, and she had been in one of the wards of the Montreal General Hospital in 1914, where she had been treated for disease of the heart and kidneys, this latter being quite enough to account for her uterine haemorrhage, so she was advised to rest and to take hot douches and tonics. She was seen periodically off and on until January 1921, her general health and local condition remaining the same. The uterus was then removed, she made a perfect recovery and is now in such good health that she wishes to resume her occupation as nurse, which her ill-health had compelled her to relinquish several years ago. Examination of the interior of the uterus revealed a small fibroid polypus attached to the fundus. This growth was surrounded by a small area of ragged looking tissue, which was pronounced by Dr. Rhea to be benign.

Case Reports

NEPHROLITHIASIS, PYONEPHROSIS AND IMPACTED URETHRAL CALCULUS IN A BOY FOUR YEARS OF AGE

Hosp. No. 4051-21.

W. C., a male 4 years of age, entered the Montreal General Hospital in the surgical service with a history of prolapse of the anus. His past history was irrelevant. There was during defecation a slight prolapse of the anus, but what was more important, a difficulty in urination without frequency. Soon after entering the hospital, urination became painful and the child pulled at his penis during the act. Acute retention soon developed necessitating catheterization. It was noted that in the membranous portion of the urethra the catheter met with some obstruction. The bladder, however was emptied. Examination at this time showed a palpable, hard mass at the peno-scrotal junction. This was also shown by X-ray and at the same time a diagnosis of multiple stones in the pelvis of left kidney was made. Three days later, he again developed acute retention. This time it was impossible to insert the catheter into the bladder on account of the stone impacted in the membranous portion of the urethra. This was removed surgically. Recovery was uneventful. Pus and albumin in his urine, which had been found at the first examination, continued and on catheterization of the ureters it was found that urine from the right ureter was normal while that from the left was turbid, acid, showed albumin, pus and masses of epithelium. A nephrotomy was performed. After the kidney was cut down upon an attempt was made to remove the stones through a pyelotomy incision, with the hope that the kidney might be saved, but some of the stones projected so deeply into the kidney substance and this organ showed such marked evidence of degeneration, it was thought advisable to remove it. Recovery was uneventful.

Stones in the *kidney* at this age are uncommon; stone in the *urethra* still more uncommon. The urethral stone no doubt came originally from the kidney. Reaching the bladder, it increased in size and finally passed into and blocked the urethra. This case furthermore illustrates the ease with which complete urological examination, including ureteral catheterization, can be conducted in young children.

H. C. Cassidy, M.D.,
Senior House Surgeon

A CASE OF ANUS VESTIBULARIS; RECONSTRUCTION WITH SUCCESSFUL RESULT

R. O'Callaghan, M.D.

Calgary

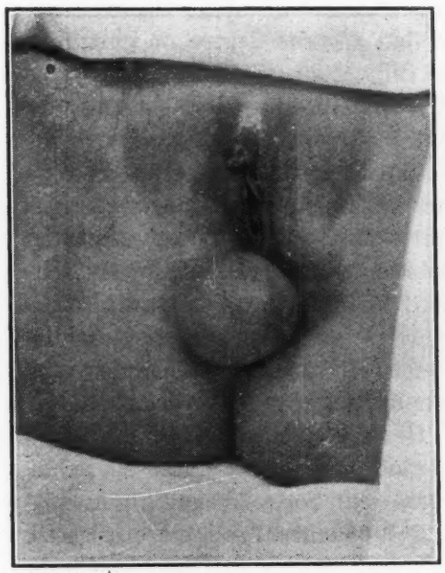
Female patient. Age 9. Born in England. At birth it was noticed that baby had no anal orifice. Over the site of the anus was a small tumour growth. Further examination revealed a small fistulous opening in the lower end of the vestibule. After consultation, it was thought advisable to wait until later if no serious symptoms arose.

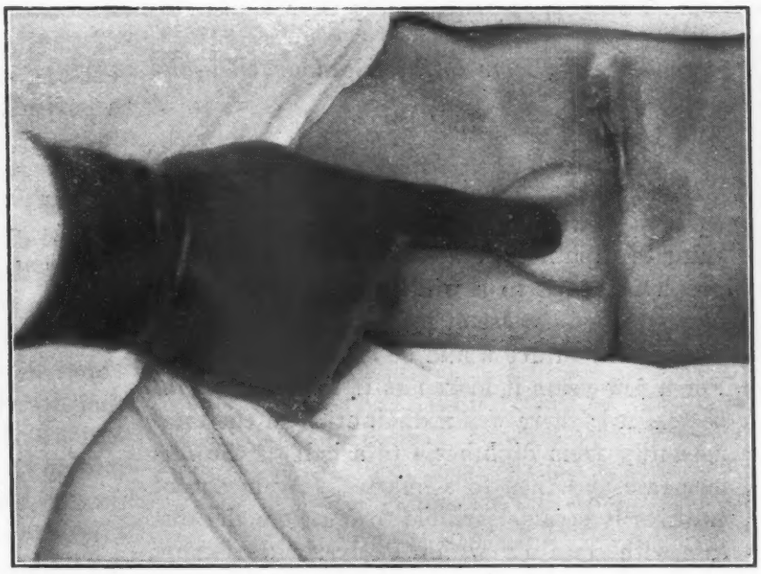
The mother moved her residence and since that time, nine years ago, the child has had no attention. The bowels have never moved normally. About once a month she would have a desire to defaecate and would roll on the floor in great pain. The mother would support abdomen and back, and with great pain and straining the girl would pass hard pencil shaped faeces.

Of late the abdomen has been getting larger and the attacks of pain more frequent; while the passing of faecal matter took place at longer intervals and with greater pain. Recently she has had symptoms of partial obstruction, vomiting, pain and fever.

Examination. A fairly well nourished female child 9 years old. Heart, lungs and kidneys were normal. Abdomen enormously distended, symmetrical. On palpation a large tumour mass can be felt occupying the middle line from ensiform cartilae to the pubis; it can be moved laterally and is quite tender on manipulation

and gives a doughy sensation on touch and appears to be the greatly enlarged and distended colon. Examination in lithotomy position discloses a tumour the size of a hen's egg springing from right buttock close to the natal fold and falling across the mediam line. On holding this back a complete absence of the anus is seen. The condition was one of Anus Vestibularis, the opening being so small that it would not admit a lead pencil. X-Rays were taken following a small Bismuth meal and showed a greatly enlarged colon. The tumour was diagnosed as a lipoma and found to be such at operation.





Operation. The tumour was removed and the anal orifice was dilated until a finger could be admitted. The great mass of faeces could then be felt smooth and hard. This was gradually broken up with the small finger and spoon.

Following this the bowel was irrigated and more of the mass softened and washed away. The original plan was to move the whole orifice down to its proper level but as there was good sphincter action in anterior or upper wall it was decided to leave the same intact. Splitting the perineum from posterior wall well down towards the coccyx and dissecting free this wall it was brought down and fixed to the skin margin. The child six months later was in excellent health, her bowel movements daily with complete control indicating that colon was evidently getting back its lost tone.

This case is interesting owing to the following facts:

1. That for nine years a proper bowel evacuation had never occurred.
2. The enormous dilatation of the whole colon.
3. The slow onset of obstruction.
4. The complete relief and sphincter control gained in the re-constructed anus.

Prostatectomy in Bad Surgical Risks.—Old age, according to H. G. Bugbee, New York (Jour. Amer. Med. Assoc., September 17, 1921) is not, in itself, a contraindication to operation, and has probably been overestimated as a risk. Even in the presence of advanced cardiac and renal complications, prostatectomy may be carried out with success by a step-by-step process, improving the local condition of the urinary organs with each step, and giving much attention to the patient's general condition as one progresses. Hæmorrhage should be avoided at the enucleation of the prostate, much of the shock and renal insufficiency being thus prevented. The mortality resulting from such a procedure will be slight. Pulmonary embolus is always a possibility, and probably a more frequent occurrence than after most other types of operation.

Retrospect

THE PROBLEM OF THE CONTROL OF DIPHTHERIA

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Towards the close of the last century the discoveries of the diphtheria bacillus and of the value of diphtheria antitoxin for treatment and prophylaxis led to a widespread hope that the most dreaded disease of infancy had lost its terrors and in future would be entirely controlled. For a few years it looked as if this hope might be realized; there was a diminution in the total mortality from diphtheria to a half of the former rate and then to a quarter. By means of cultures it became possible to diagnose the disease with certainty within twelve hours; serum cured practically all cases if given in time and prevented further spread of the infection if given in prophylactic doses. Diphtheria appeared to be conquered and destined to be stamped out in all civilized communities.

After a number of years, however, it became evident that this optimism was not justified. The number of deaths from diphtheria in any country where accurate records were kept remained remarkably constant. Diphtheria still remained the third most important cause of death from contagious diseases. The morbidity of the disease was not changed, the same number of cases per 100,000 of the population occurred year after year, (1) and it was increasingly evident that, in spite of the great advances made, some new method must be introduced if the disease were to be actually controlled. In spite of improved registration and quarantine, in spite of isolation hospitals, in spite of free antitoxin and state laboratories for bacteriological tests, an apparently irreducible minimum of cases remained in every country with a death-rate of disheartening proportions; e.g. in the United States about 12,000 deaths a year were due to this disease.

This was the position of the question when Schick published in 1913 (2) an account of the cutaneous reaction which has since borne his name. This test stands alone among immunological reactions. It is not a test for the existence of the disease, but for the degree of immunity existing in the individual. Regarded at first as a curiosity or a matter of academic interest to investigators, it has gradually assumed a greater importance, until now it again gives us hope that the former optimistic belief may be realized and diphtheria finally controlled through the use of this reaction when combined with Behring's method of toxin-antitoxin immunization.

The details of the technique of the Schick reaction are practically unaltered since the original description by Schick. The various publications of W. H. Park (3) and A. Zingher (4) describe it in detail. 1-50 of the minimum lethal dose of diphtheria toxin for a 250 gm. guinea-pig diluted with 0.2 cc. of normal saline are injected intracutaneously and in 48 hours the reaction is seen at its maximum as a reddened and infiltrated zone of 10-25 mm. diameter, followed in a few days by pigmentation and a slight desquamation. The chief difficulties encountered have been, first, in the securing of a reliable standard toxin which has not lost its virulence by warmth or exposure; and, second, in the occurrence of pseudo-reactions, which can be excluded by suitable controls and by experience in the appearance of the typical reaction.

The results of the Schick test as given by various writers from their experience on many thousands of cases are practically identical. For example, all but 20% of children under 6 months of age are found to be immune, 70% of children between 1 and 3 years are found to be susceptible, i.e. give a positive reaction; after 3 years of age the proportion of positive reactions gradually falls until in adult life only 15% give a positive reaction. A dose of 1000 units of diphtheria antitoxin causes the reaction to become negative immediately but this immunity passes off in about three weeks. The toxin-antitoxin immunization takes about six weeks to produce a negative test, but practically all cases are still negative at the end of a year.

The revolutionary suggestion has been made by Park and others that it should be possible tc test the whole population, or at least all school children and permanently immunize all that were found susceptible, thus finally eradicating the disease. An endeavour has been made to carry out this suggestion in various parts of the United States on a large scale. (6)

When we turn to the consideration of the question on the other side of the Atlantic, we find they are by no means prepared to accept the enthusiastic schemes of the Americans. The French Society of Paediatrics recently drew up a series of recommendations for combating diphtheria (7); in these both the Schick reaction and toxin-antitoxin prophylaxis were deliberately excluded, the former on the ground that there was no proof that it indicates an absolute immunity, and the latter because of the length of time required to produce immunity. Martin, (8) at a meeting last April of the Societé Medicale des Hopitaux de Paris, expressed the opinion that the Schick reaction, although very interesting from the biological and immunological points of view, should not be included in routine prophylactic work.

In England the Ministry of Health has issued a report of methods of prophylaxis by Dr. S. M. Copeman, F. R. S.; (9) this describes in detail the Schick reaction and toxin-antitoxin immunity but concludes that "more information and experience would be necessary before this could be recommended, and it would be necssary to be satisfied that equally good results cannot be obtained by extension and improvement of the methods of diphtheria prevention on which we rely at present."

In conclusion, it has been established that, when properly performed, the Schick reaction is a thoroughly reliable test of susceptibility to diphtheria. Having by its means detected the non-immune portion of a community, it is possible to protect these persons by active immunization. Therefore it is now possible for any civilized community to protect itself absolutely and permanently against the disease. Whether, in view of the difficulties of government control of hygienic measures and the peculiarities of human nature, this is practicable as well as theoretically possible remains to be seen.

REFERENCES

1.—B. W. Carey, Jour. Am. Med. Assoc., Aug. 27, 1921.

2.—B. Schick, *Munch. Med. Woch.* 1913, vol. 50 p. 2608.

3.—W. H. Park,Arch. of Pediatrics, 1919, vol. 36, p. 301.

4.—A. Zingher, Jour. Am. Med. Assoc. 1920, vol. 75, p. 1333.

5.—Kroliner and Moshage, Am. Jour. Dis. Child. 1915, vol. 9, p. 189.

6.—A. Zingher, Jour. of Lab. and Clin. Med. 1920, vol. 6, p. 117.

7.—Harvier, *Bulletin Med.* 1920, 34 p. 444

8.—L. Martin, *Presse Med.* 1921, vol. 29, p. 298.

9.—S. M. Copeman, Ministry of Health Reports, No. 10, 1921.

THE PARKINSONIAN SYNDROME

(PART TWO)

COLIN RUSSELL, M.D.

The cause of Parkinson's disease is often impossible to determine. Patients frequently blame an emotion. With regard to this, it is necessary to distinguish between acute emotions and the chronic emotions. Fright is most commonly blamed. Potain on this account speaks of paralysis agitans as a fixed fear. In spite of this, it does not seem possible that fright, however vivid, can produce tremor of the Parkinson type. The time intervening between the emotion and the appearance of the tremor is not always indicated. Further, authors are dependent upon the story of the patient, or his friends, that is to say, an old memory, and not very precise. One is convinced, in all these cases, the emotions simply emphasize a mild tremor formerly present at times, at others, more or less latent and unperceived. One cannot conceive an emotion due to a tremor localized to one limb, and if it were possible to conceive of this, one cannot say why without a new emotion it could generalize itself after some months or even years to an homologous limb, or to the opposite side. Medical officers with years experience have never or very seldom discovered tremor of Parkinson's disease among the soldiers. Numerous cases of paralysis agitans have been observed who blamed their disease upon strong emotions, bombardment of fire, but after close questioning one is convinced that this was not the case.

As for traumatism, among many wounds or contusions of periphereal nerves that have been seen during the war, a long time after the receipt of the wound, not a single case of Park-

inson's disease has been observed.

We come now to the cases which appear best established, and to which we can attach a little more interest, namely, the infections. The recent epidemic of encephalitis lethargica which produced so many cases of the Parkinsonian syndrome has drawn our attention to the etiological role of the infectious diseases. Previous to this, the disease as a consequence of infection was ignored or systematically neglected. In 1846, Romberg published a case of paralysis agitans following lead poisoning. Leroux, in 1880, quoted a similar case. Crespin and Bernhardt reported one following measles. Vesselle and Rouvillois, one following acute rheumatism. In 1893, Gowers declared that Parkinson's disease could follow dysentry and typhoid fever. Among all these cases, I will choose two very satisfactory ones. Lannois has observed a child of 12 years old who, after measles, presented a Parkinsonian syndrome, and who, six years later, had typical paralysis agitans with rigidity, tremor, trembling, sensation of heat and exaggerated perspirations. The observations of Franck R. Fry concerning a man of 37 years who, in the 4th week of typhoid fever was affected with a Parkinson tremor which little by little affected the upper limbs then the lower. Three years later he presented all the signs of paralysis agitans. Encephalitis lethargica has given rise in the last three or four years to a great number of such cases. Souques has himself seen 26 such cases.

Dana, in 1899, insisted strongly on the etiological role of the infections and intoxications. For him, most cases are of this origin. The infection and intoxication produce changes in the nerve cells which degenerate slowly. In spite of this degeneration they carry on often during many years, but there comes a day when these damaged cells finish by dying and it is then that paralysis agitans appears.

Syphilis is not an etiological factor.

Besides the infections and intoxications it is necessary to consider cerebral arteriosclerosis. The frequency, at autopsy, of atheroma of the circle of Willis and its branches, explains why this cause is considered seriously. Besides this clinical consideration, paralysis agitans usually appears in the second half of life and has a slow evolution, which coincides with the appearance and the progressive character of arterial changes. These changes diminish the calibre and the elasticity of the vessels, and by impaired nutrition may cause a slow degeneration of the nerve cells. Some authors consider cerebral arteriosclerosis as the only cause of Parkinson's disease. But the role of cerebral arteriosclerosis is difficult to accept in cases of juvenile paralysis agitans and besides numerous authors, Hunt and Tretiakoff in particular, have not found very marked lesions of this nature in the corpus striatum or the peduncle. Parkinson's disease does not as a rule show an arterial hypertension. In fact, new researches are necessary to prove the etiological role of cerebral arteriosclerosis in the determination of Parkinson's disease. Certainly it is perfectly possible and admissible.

There are some special cases where arterial changes appear to be the cause; those causes with destructive lesions, lacunae, softening or haemorrhages in the striate region already mentioned.

Sex and race have no influence in the disease. It usually comes on between 40 and 60 years of age. One has noticed a similar heredity, but it is too rare to justify any conclusions.

Symptoms of the Parkinsonian Syndrome

The symptoms of this disease are too generally well known to require description in detail. They are: tremor, muscular rigidity, abolition of automatic and associated movements, vaso-motor disturbances. As the disease goes on, these symptoms interfere with the execution of ordinary voluntary movements until finally these become limited and exhausting. The retardation of movement is most striking; when the patient is ordered to execute the most simple acts, minutes may elapse before the movement is initiated. Both static and dynamic activity of the muscles is diminished, producing a peculiar facies and the characteristic attitude of the head, trunk, limbs and spine. The freedom of movement of the eyes is in striking contrast with the immobility of the head. One of the rarer symptoms is what Tilney of New York, in 1911, described under the name of "progression meladromique," but which Souques prefers to call "paradoxic kinesia." Patients who could hardly make a few steps were at times able to run. Another who was unable to make any movement, or even lift a limb, could at times cross his knees spontaneously, or on command,

with one single movement of normal rapidity. When this patient wanted to talk he found it impossible to open his mouth. When he was asked a question, it would take him sometimes five minutes or more to answer. On one occassion, although he tried to talk, he could not utter a word for fully an hour. Occasionally, however, this same individual would be able to speak easily without the slightest effort. No explanation has been given for this curious phenomenon.

Clinical Forms of Parkinsonian Syndrome

One recalls three principle forms of Parkinson's disease:-

1.—The typical form—a mixture of tremor and rigidity, involving all parts equally.

2.—A "forme fruste" with tremor with little or no rigidity. It is striking an account of the absence of the characteristic attitude.

3.—A "forme fruste" with rigidity but little or no tremor.

Besides these well known classical forms, it is necessary to note other types in which the age at the time of onset, or the peculiar nature of the case presents special features.

1.—The pre-senile or senile Parkinson syndrome, this is the classical paralysis agitans, which has served as a model for the descriptions of all types. It appears about the age of 40, insidiously, without determinable cause, and progresses slowly. Besides this typical form, one may observe two incomplete types; the one with the absence of rigidity, and the other with the absence of tremor.

2.—The juvenile Parkinson syndrome appearing before the age of 30, sometimes hereditary. The evolution of this type is apt to be more rapid, the bulbar muscles are more often affected than in the senile type, but there is in reality no reason to separate these two forms.

3.—Parkinson syndromes with pre-senile lesions of the corpus striatum. In these cases the tremor is absent, but clinically it is impossible to differentiate between this and the "forme fruste" of the classical paralysis agitans mentioned above. Autopsy shows neuroglial proliferation of the entire corpus striatum, and calcification of the striate arteries.

4.—Parkinson syndromes with focal macroscopic lesions. It is often difficult to differentiate this syndrome from the classical type except that the onset usually is acute and may follow a stroke. Autopsy reveals the presence of lacunae in the corpus striatum.

5.—Parkinson syndromes following encephalitis lethargica. Such cases have been noted in the literature of all countries, and the absolute resemblance with Parkinson's disease has been mentioned by all. Unquestionably, encephalitis lethargica is one of the causes of paralysis agitans. The lesions of encephalitis, although later becoming diffused, attack principally the mesocephalon and the central ganglia. Precisely at that level the best carried out researches have localized the lesion of Parkinson's disease.

The Parkinson syndrome is apt to appear in severe and moderately severe cases of encephalitis where the oculo-lethargic symptoms have been marked, and first appears as these are clearing up. Souques, basing his observations on some 60 cases from his clinic and the literature shows that most of them occur during the first half of life. As a general rule the symptoms appear during the first month of encephalitis. The onset is generally rapid; muscular rigidity is the chief symptom. The tremor is slight and frequently transient; in some cases, the emotional disturbances, exhaustion and the voluntary movements are very marked. In two thirds of the cases the onset was with rigidity alone, or associated with tremor, the latter was absent in one-third of the cases. More often the tremor and rigidity became generalized at once. This is almost never seen in classical paralysis agitans. In one-third of the cases it was monoplegic or hemiplegic at the onset. The cerebrospinal fluid showed no lymphocytesis nor increased globulin. Not infrequently the Parkinson syndrome disappeared in the course of a few months, but Souques believes that where, following encephalitis, it still persists after two or three years, it is then to be considered definite paralysis agitans.

Diagnosis of Parkinsonian Syndrome

It is practically only in very early cases or in undeveloped cases that an error of diagnosis is likely. Even when the tremor is present as a more or less isolated symptom it is rare for the diagnosis to present any real difficulty. Hereditary or family tremors, the tremor of Basedow's disease, hysterical tremors, or toxic tremors can be differentiated by the character of the tremor itself and the concomitant phenomena. There is no such thing as a senile tremor,

according to Souques. Sometimes in paralysis agitans the tremor is intentional for a longer or shorter period, and one might in this case think of disseminated sclerosis, but the concomitant signs, the presence of Babinski's plantar phenomenon will easily make the differentiation.

In cases where the rigidity exists as an isolated symptom, the Parkinson disease may be confounded with the pseudo bulbar paralysis or the paresis of old people due to what Pierre Marie has described as "l'etat lacunaire de desintegration" affecting the internal capsule, which presents an inexpressionless facies, a speech monotonous and difficult to understand, progression with short steps on a wide base and the stiffness of the limbs. The existence, however, of exaggerated reflexes with clonus or Babinski's sign, of spasmodic laughter and crying, and mental involvement, generally clear up any difficulty. The history of one or more slight apoplectic strokes is also very important.

Treatment of the Parkinsonian Syndrome

There is naturally no specific or curative treatment. Palliative treatment may be medical or physical. Opotherapy has proved useless. Good results are usually obtained by the administration, either by mouth or hypodermic injection, of scopolamin, hyposcine, atropine or eserin, given in small doses, care being taken to avoid the toxic effect. Arsenic in large doses, especially cacodylate of soda, has been employed to lessen contractures; the results, however, have been disappointing. the contractures being diminished, but the cerebral excitation being proportionately increased. Physical agents such as hydrotherapy, mobilization of the joint, massage and keeping the patient in a "fauteuil trepidant" are recommended for alleviation of the symptoms.

A Plea for the Metric System.—For years the problem of introducing the metric system into general use in this country has occupied the interest of physicians as well as of other scientists. This system is today employed in all the civilized world except Great Britain and her colonies, Russia and the United States. Even Russia, before the outbreak of the war, calculated all her imports according to the metric system. The present time seems to be distinctly opportune for a renewed agitation in the United States for adopting the system. Two million American soldiers received some instruction in its use during their sojourn in France; many of our industrial plants became familiar with the metric scale through work on war material designated for shipment abroad., and the wiping out of international borders is today more closely realized than ever before in the world's history. At its last meeting, a committee of the American Chemical Society recommended the general adoption of the metric scale and requested that chemists hereafter order all supplies in metric quantities. A resolution favoring the method was introduced into the House of Delegates of the American Medical Association, at the Boston session. As one hears of the numerous organizations cited as being wholly favourable to discarding the old methods and to replacing them by the metric, one wonders how it is that the change has not long since been made. The medical profession should take the lead and not follow in this reform. If it is to do this, the first step must be education of the young men. Teachers in medical colleges should teach in terms of the metric system and talk in terms of the metric system at the bedside as well as in the lecture room. To stop at this, however, would be slow work. It is necessary that medical journals, too, should feel their responsibility in this matter. If authors who submit manuscripts do not give measurements in metric terms, the periodicals may aid the movement by making the necessary transposition.—*Jour. A.M.A.*, October 15, 1921.

Editorial

ON THE DANGER OF EX-SERVICE MEN WITH NO MEDICAL KNOWLEDGE ATTEMPTING OSTEOPATHY OR SO-CALLED CHIROPRAXIS

IN no spirit of envy or malice against the cult of Chiropraxis, but in a very sincere appreciation of the dangers to which its practice exposes a public, easily imposed upon by plausible doctrines, we desire to express our great regret that a Minister of the Federal Government, a graduate of one of our old universities should have succumbed to the arguments or blandishments of uneducated poseurs, and should have recognized in any degree this cult. This feeling will be shared by all who appreciate the value of knowledge and who know that our bodies are fearfully and wonderfully made, and have experienced how frequently ignorance aggravates trouble. In a morning paper we noted three cases reported in which death had resulted under chiropractic treatment; cases in which humanly speaking life might have been saved by knowledge and skilful surgery. It is with such facts in mind that we desire to call the attention of our readers to the letter from the Chairman and Secretary of the Executive Committee of the Canadian Medical Association to the Minister of Health in Ottawa.

Since writing the above we have received a reply from the Hon. Dr. Beland, and we desire to express appreciation of the promptness with which Dr. Beland has recognized the unfortunate condition which would arise from uneducated men attempting to treat disabled soldiers.

ON THE TREATMENT OF THE TUBERCULOUS EX-SERVICE MAN.

THE two reports* recently published by the Department of Soldiers' Civil Re-establishment on Tuberculosis affecting ex-members of the Canadian and Imperial Forces in Canada show that this important subject has received the serious consideration of the Government.

In 1920, a Board of five sanatorium physicians, senior men in this field in their respective provinces, visited the twenty-seven sanatoria and hospitals in which tuberculosis was specially treated. They were instructed to study the whole question of tuberculosis in relation to ex-service men both as regards the present and the future and to report their observations and conclusions in detail.

It is a satisfaction to learn that "Canadians may feel assured that their fellow-country men who have given war service and who are now tuberculous are being cared for by physicians competent and experienced, in institutions specially developed for their needs of which the country may well be proud."

By April, 1920, 8,571 tuberculous patients had been treated by the Department. The rate of development of new cases was then declining. This harvest from war (double what should normally be expected from a similar number of men of military age) threw a heavy strain on the limited facilities for treatment available at the beginning of 1916, and the slow turn-over of patients intensified the strain until new construction was able to meet the need.

The Government immediately undertook not only a rapid development of most of the existing sanatoria but also the con-

struction of new institutions to meet this need, so that the sanatorium accommodation was more than doubled by the end of 1919, when 3,800 beds were available for soldiers and civilians. All provinces received due consideration. More than seventy new buildings were erected and many existing buildings enlarged. While most of these were admirably constructed for their special purpose, some few institutions, improvised in time of need, were found not to be entirely satisfactory. These were closed as soon as the patients could be transferred. Under the circumstances criticisms and complaints from both patients and public were at times inevitable. It is noteworthy that 72% of the complaints of 1,530 patients visited were massed in two institutions, proof that reasons for complaint elsewhere were few. Sanatorium life proved to be most irksome to many ex-service men whose previous military life had in every way been subversive of the constant restraint necessary for the successful treatment of tuberculosis. It is, therefore, not surprising that disciplinary difficulties, often a serious handicap to efficient treatment, were frequent, especially in the earlier years.

The participation of the Federal Government in sanatorium development was a result of the war which has already benefitted the public at large. No decade of peace could have effected so much for the treatment of tuberculosis. All the sanatoria with their excellent diagnostic facilities, including laboratories and X-ray departments, may, if properly preserved and developed, now become diagnostic centres in their communities. The sanatoria were in many instances under-staffed medically. This is ascribed in part to the difficulty of obtaining physicians interested in tuberculosis, but it may be surmised that if the directors of sanatoria had the will to have their institutions well-staffed physicians could be obtained. Tuberculosis can no longer be regarded as a restricted field but one with which all branches of medicine are intimately associated.

The statistical studies on such a large group of cases (8,571) are of interest and value. Throughout the period of the war it is calculated that 4.3 men developed tuberculosis each year for every 1000 under arms. Forty-four per cent. of these had positive sputum. A much larger proportion, therefore, were less certainly tuberculous than has hitherto been the case in civilian sanatoria where about seventy per cent have positive sputum. Broadly speaking, there was found to be twice as much so-called tuberculosis amongst the ex-service men as amongst civilians of the same age period. In the several provinces the morbidity rate varied directly with the tuberculosis death rate, showing that the tuberculosis in the army was proportionate to that in the civilian population from which the men had been drawn. About 10% of the patients admitted to sanatoria were diagnosed ultimately as non-tuberculous. Poison gas was considered a factor in the development of tuberculosis in only 5% of the patients. The figures for the ex-service men may possibly approach a truer index of the amount of tuberculosis actually developing each year than that estimated for civilian life, since the soldier has been under closer supervision than the civilian,

Not only has the treatment of the tuberculous ex-service man been well managed by the Department but timely assistance and a real and needed stimulus have been given by the Government to the whole anti-tuberculosis work in Canada.

The care and employment of the tuberculous ex-service man after discharge from the sanatorium is now of relatively greater importance than his treatment in efficient sanatoria. Information broadly gathered from the literature, from personal inspection of places in England, the United States and Canada, where practical measures along this line are already in operation, from localities of special interest in Canada and from patients themselves, past and present, is condensed in a wide survey of this problem. The danger of relapse is emphasized and many practical measures for its prevention suggested. A

follow-up system by specially qualified nurses, and by adequate medical supervision, are here of first importance. Provision of an opportunity for sheltered employment in varied forms is urged. What form this should take will necessarily depend upon the number of men to be cared for and the locality. Shops with various suitable crafts, industrial colonies, group enterprises where numbers are too few for a colony, and individual assistance are recommended. All who are medically fit to undertake limited work may thus become self-supporting and useful. It is proposed that such undertakings should be carried on by non-Governmental agencies with some financial aid for their establishment and maintenance from the Government. The number of patients who are in the readjustment period after discharge and may either relapse or attain economic rehabilitation, for whom such opportunities should be provided, has been estimated at 4000. The urgency of realizing the general plan suggested is obvious. Some parts have already been put into operation, but little has yet been done in providing sheltered employment. Time passes, and if a strong administrative body cannot be found to undertake the work the Government should itself carry out the measures recommended. This study of the problems of "after-care" (hitherto the weakest point in the treatment of tuberculosis) constitutes the most comprehensive review that has yet been published on the subject.

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*1. Summary of Report of Board of Tuberculosis Consultants, 1920.

2. The Care and Employment of the Tuberculous Ex-service Man after discharge from the Sanatorium, 1921.

THE OCTO CENTENARY OF ST. BARTHOLOMEW'S SCHOOL

THE many physicians practising in Canada who have taken post-graduate studies in London will all have kindly memories of the stately buildings of 'Old Barts' standing in a central position close to famous Smithfields the scene of so many important events in English history. We learn that the hospital is about to celebrate its 800th anniversary. At a meeting held at the Mansion House in London preliminary plans for the celebrating next spring of the anniversary of this, the oldest hospital in London, were made. The Prince of Wales, president of the hospital, has given his cordial approval to the scheme. All universities will be invited to send representatives, and the Lord Mayor will be permanent chairman of the grand committee.

The quaint story of the foundation of St. Bartholomew's by Friar Rahere is told in a charming manner by Sir Norman Moore. Rahere was 'born of lowly race,' but by his wit became first a court jester and later a monk. He made a journey to Rome to obtain forgiveness for all his sins, but on his way back fell ill, and on his sick bed made a vow that if he recovered he would build a hospital for the recovery of the poor. While still unfit to travel, St. Bartholomew appeared to him in a dream and gave him directions for building a priory and outbuilding in Smithfields then 'an unclean field' outside the city walls. His zeal and energy carried the plans through, and in March A.D. 1123 the building was opened and many notable and miraculous cures were obtained in it. The whole story is told in a manuscript called "Liber Fundacionis" written about 1189, and now in the British Museum, of which a very full account with extracts has been given by Sir Norman Moore. The ancient cartulary of the hospital, written in the reign of Henry VI by John Cok, contains a copy of every royal or private charter, and of every Papal Bull belonging to St. Bartholomew's Hospital at that period of the fifteenth century. For the first four hundred years of the institution its character as a religious house was preserved, and it was not until Tudor times that it came into prominence as a place for the treatment of sick people. But

even in mediaeval times it had its influence on the course of medicine in the British Isles. From the time of Henry VIII's charter its progress as a great force in the history of medicine was unmistakable. On the ruins of the old order was then raised the great hospital as we know it to-day.

Therapeutical and Pharmaceutical Items

ON STANDARDIZATION

The physician when he administers digitalis to a patient with auricular fibrillation now knows much more accurately than he formerly did what effect he should get. Secondly, he knows that he must often employ doses which verge on toxic ones and that his patient must continue to take a certain number of drops daily to maintain the necessary degree of heart-block. Should the patient obtain a weaker preparation, he will suffer; should he get a much stronger one, he will show symptoms of poisoning. Yet, at present, neither physician nor patient has any guarantee that any tincture he may buy is of a given strength. Tinctures of digitalis assayed pharmacologically in this province have varied from one-eighth to twice the normal strength. This is dangerous.

Any 100 cc. of tincture made from 10 grammes of digitalis leaves with 70% alcohol by percolation is legal. Its activity will, however, vary greatly with the strength of the leaves.

Similarly, there is no legal standard for Pituitary nor Suprarenal Extract nor for preparations of Ergot. Even for Arsphenamine (Salvarsan, 606) there is in this country no legal standard of purity or strength. A physician depends solely on the manufacturers' tests. Every batch of Arsphenamine sold in the United States is tested by the Government before it can be sold. The physician in the United States is protected, here you are not. In the forthcoming edition of the U. S. P. it will be required that digitalis, strophanthus, pituitary, suprarenal and probably ergot preparations conform to certain standards of pharmacological activity. The physician in the United States will be protected, you will not. This again is dangerous.

The Canadian Medical Association, the Ontario Medical Association and even the Pharmaceutical Section of the Canadian Manufacturers' Association realize that this dangerous condition must be met and overcome. Consequently, these bodies, with the aid of the provincial Associations, are taking action. Your help may be required.

It is planned to approach the Government with the following proposals:-

1. That the Department of Health of the Dominion add to its laboratories one charged with and capable of the physiological assaying of drugs.

2. That the Governor in Council, under para. 14 of the Foods and Drugs Act, 1920, S.C. 10-11, George V, prescribe standards for:-

   (a) Arsphenamine and its allied substances.
   (b) Pituitary Extract
   (c) Suprarenal Extract
   (d) Standardized Tincture of Digitalis
   Standardized Tincture of Strophanthine
   Standardized Tincture of Ergot

3. That samples of all preparations of these drugs to be so labelled must be submitted by their manufacturers to the Laboratory of the Department of Health for assay and may not be sold or distributed until they are approved as of the required strength as per regulations to be laid down by the Governor-in-Council, and that they shall then bear upon their labels the Government approval and the Government number of the sample submitted.

4. That the manufacturer pay an adequate fee for each such sample submitted for analysis.

5. That the Department of Health, through the Inspectors appointed for the administration of the Act, obtain and assay samples of these products from time to time as sold by druggist or wholesale house to insure that such samples have not been tampered with subsequent to the approval for their sale having been given.

If the Government undertakes this task it will be a most important forward step and a great protection to every physician and his patients. It will be a real advance in our national development.

We are satisfied that the government at Ottawa will take this step if the profession demands it. Will you discuss it with your local member? Write to him about it. Let your local society or provincial society feel that you are behind the move. If you do not realize the need, we are willing to give you more information.
we are willing to give you more information.—V. E. HENDERSON, Dept. of Pharm., U. of T.

COAGULANTS AND HAEMORRHAGE

Occasionally both physicians and surgeons encounter in their patients bleeding that is difficult to control, epistaxis, bleeding from ulcers of the intestinal canal, pulmonary haemorrhage, heamorrhage of the new-born and, more rarely, haemophilia. From 1910 to '13 Howell published a series of papers in which he gave a new explanation of the process of clotting of the blood. He again attracted attention to the fact that extracts of tissue aid in clotting and ascribed this action to the presence of the complex fatty body, kephalin, which can be obtained most abundantly from the brain. Based on these papers many manufacturing houses have prepared "coagulant preparations" such as Coagulen (Ciba), Hemostatic Serum and Coagulose (P.D. & Co.), Kephalin (Armour), Thromboplastin (Squibb). Recently, 1921, Mills has shown that kephalin does not represent the important ingredient of tissue extract and much doubt has been cast on the whole explanation of Howell, which, it may be remarked, has never received general scientific acceptance. Further, these proprietary preparations have been carefully examined experimentally, both by Mills and by Hanzlik, and have been shown to have very slight activity, that of Coagulen, Hemostatic Serum and Coagulose proving but little more active than normal saline. The effect of the others was somewhat more marked, All these preparations are exceedingly weak compared with one recently prepared by Mills. The clinical reports on all these preparations are not very convincing. This is very natural. If one has bleeding from a ruptured artery into a viscus or cavity, a coagulent to stop the bleeding must produce a clot in the artery. Enough to do this may readily cause clotting elsewhere, as Mills has shown. If enough coagulent extract is used death occurs from clotting in the vessels. The margin of safety between clotting in the bleeding artery or vein and in the normal vessels must be small. If one applies the substance locally to the bleeding area it is necessary for it to be so absorbed as to reach the blood in the bleeding vessel. This will be hard to achieve. Capillary oozing from ulcers in the gut, as is well known, disappears and reappears without treatment in the most irregular fashion. One can never say when a drug has caused this. Haemorrhage of the new-born can be controlled and cured by transfusion, this is a known and safe procedure. Mills has further shown that small or slow injections of a strong coagulent tissue extract may greatly decrease the coagulability of the blood. Surely until the scientific basis for the use of these extracts is better established or their clinical usefulness fully shown in carefully controlled investigations, the physician should not be misled by the exaggerated claims of manufacturing houses cunningly concealed in a false scientific garb.

Correspondence

ROBERT C. PATERSON MEMORIAL FUND

The many friends of the late Dr. Robert C. Paterson were shocked to hear of his tragic death in Saranac Lake on December 24, 1921, A memorial is being planned as a tribute to the memory of a man, whose life was one of service to others, and the following letter has been sent to all former patients. We quote this letter feeling that many of the medical profession who knew Dr. Paterson will also be interested to contribute.

An outstanding Canadian physician, one of the best known in tuberculosis, this letter makes an appeal to all good Canadians.

A gold medallist of McGill, two years resident in Montreal General Hospital, two years in pathology and general medicine abroad. When health broke down he fought his disease to a stand still and then devoted his life to others.

He made notable contributions to our knowledge of tuberculosis and gave promise of much more in the future, both from the laboratory and the clinic. He offered his services to his country early in the war but was not accepted because of his physical condition. He did his part by carrying on at Saranac Lake shouldering much of the work there while six of the physicians were on war service.

Big of heart, big of body, open hearted, clean Scotch vigor in opinions and expression, he cheered and encouraged all whom he met. Wherever he went his bluff hearty manner made him friends, and his friendships were not of a moment.

His death was a tragedy, friends, patients, confreres, wife and family suddenly bereft. The memorial will be one of recognition, affection and gratitude.

To the Editor:-

Among a few of Dr. Robert C. Paterson's patients in Saranac Lake, the affection and gratitude which they felt for him have crystallized into a plan for a memorial trust fund to be administered by the Saranac Lake Society for the Control of Tuberculosis. The fund will be known as the Robert C. Paterson Memorial Fund, and the income will be used to aid deserving patients in temporary financial straits.

A committee has been formed on which Dr. E. R. Baldwin, Dr. Lawrason Brown, Dr. Hugh M. Kinghorn, Dr. J. A. Munroe and Dr. W. B. Soper, president of the Tuberculosis Society, have consented to serve as advisory members.

Cheques may be made payable to the Saranac Lake Society and addressed to A. P. Caywood, Exec.-Sec'y. Saranac Lake Society for the Control of Tuberculosis, Inc., Saranac Lake, N.Y.

JOHN B. BLACK
FREDERICK H. WOOLEY
HUGH M. KINGHORN

Saranac Lake, N.Y., February 10th, 1922.

ON THE CLAIMS OF CHIROPRACTICS

To the Editor:-

In view of the preposterous claims of osteopaths and chiropractors boldly advertised before a credulous public, it seems that some effort should be made to curtail their operations by legal means, and protect suffering ones from a very real danger. To justify their practice by stating that their work does not consist of operations with a knife or in the use of medicines is absurd. Our legislators must realize that the modern art of healing is not restricted to the use of drugs or to surgical operations and that while diseases are often treated successfully by the use of such agents as massage, exercise, electricity, and hydrotherapy, it should be emphasized that such treatment to avoid harmful results, must be based on a knowledge of the disease or condition to be treated.

The osteopath and chiropractor cannot in the few months of training received before they obtain their degree acquire such knowledge of the structure and function of the body in health and disease as would fit them to intelligently carry out any treatment.

There is fortunately, in Canada, an incorporated society of people practising massage and remedial gymnastics, membership in which is open to those who have satisfactorily passed a course in these subjects under medical direction. We venture to say that with regard to skill in manipulation and in knowledge of the conditions treated, their qualifications and the results obtained are superior to those of the osteopath and the chiropractor, and their work is only carried out under medical direction.

The remarkable results obtained by physiotherapy in military hospitals and convalescent homes are recognized by the medical profession and it seems a pity that such forms of treatment are not made use of more extensively in civil practice. Many members of the profession at the present do not sufficiently recognize the many advantages which may be obtained under this form of treatment when carefully and scientifically given, and we are glad to notice that this important form of treatment is gradually assuming a prominent place in the medical curriculum.

F. W. HARVEY

Montreal, March 3, 1922.

TUBERCULOSIS CONGRESS IN BRUSSELS

Sir:—The third Congress of the International Union Against Tuberculosis will be held in Brussels the 11th, 12th, 13th, of July, 1922. Papers and discussion will develop along three principal lines.

1. Prophylaxis of Tuberculosis among Children, (a) Pre-school age; (b) School age.

2. Prophylaxis Anti-Tuberculosis work in the homes by visiting nurses.

3. Suitable employment for the tuberculosis patient, and the arrested case.

Visits will be made to the different centers throughout Belgium, especially interesting for their tuberculosis achievement.

Canadians who may be in Europe at this time, and who might be inclined to contribute papers on different phases of Tuberculosis work, will be allowed thirty minutes for the reading of their papers. The Secretary for the Congress stipulates that the complete paper will be in the hands of the Secretary of the Canadian Association for the Prevention of Tuberculosis, Bank Street Chambers, Ottawa, not later than May first, to be forwarded by that office to the Secretary of the Conference. Yours sincerely,

R. E. WODEHOUSE, *Secretary*

Ottawa, March 30, 1922.

Men and Books

At a recent meeting of the Montreal Medico-Chirurgical Society, Dr. W. W. Chipman gave an address on "American Gynaecology;" an appreciation.

American medicine has a history of but three centuries. Three hundred years ago Giles Firman, Samuel Fuller, and John Winthrop practised medicine in Massachusetts, while Lawrence Bohun and John Pott were the first physicians in Virginia.

These men and their successors were the first physicians in America, men of sterling worth, "and of constant, if not warm, affections." These emigrant physicians were chiefly from Great Britain, and as time went on they trained their sons as their apprentices, and sent them back for their degrees to Edinburgh and London. It was these native-born apprentices who founded the first American medical schools; the University of Pennsylvania, in 1763; King's College, afterwards Columbia, in 1767; and Harvard, in 1782. In so doing, they really created American medicine.

Chief of these men were Benjamin Rush, William Shippen Junior, Samuel Bard, John Warren, and Philip Syng Physick. These men had all worked and studied with the great Hunters, William and John, and the other famous men whose names are associated with the eighteenth century revival of Medicine in England. They laid the foundations in America of medicine, surgery, and obstetrics; they were the forerunners who paved the way for the illustrious achievements soon to follow.

The first great achievement of American Surgery was ovariotomy. This operation was first performed by Ephraim McDowell, in Danville, Kentucky, on the 13th day of December, 1809. McDowell had gone to Edinburgh in 1793, the year of John Hunter's death, and had there learned of the drainage trocar, as the only palliative treatment for women suffering from "ovarian hydatids;"—the large ovarium cyst. John Hunter had said that hydatids of the ovary' might be taken out. There is no reason why women should not bear spaying as well as other animals." It remained for McDowell to carry this idea into execution.

By this operation the gates were set ajar to the opening of a new surgical life, for this operation made possible all abdominal surgery. Though the operation was at first condemned by both the profession and the laity, as "cruel and barbarous"—this was in the pre-anaesthetic days—still in forty years 36 operations had been performed, with but 15 deaths.

By an accidental step, ovariotomy led to the removal of a soft uterine "fibroid," when Walter Burnham of Lowell, in 1853, instead of an ovarian cyst, delivered through an abdominal incision, an enlarged uterus with its fibroid. He could not replace it, and was compelled to amputate—a courageous, though reluctant pioneer. So was launched hysterectomy.

At this time there came as a veritable gift from heaven the general use of Morton's ether anaesthesia. The happy word itself "anaesthesia" is the gift of Oliver Wendell Holmes, and Weir Mitchell poetically defines its slumber as "the death of pain." This was the beginning

of abdominal surgery, and in this great beginning American surgeons took a leading part.

The second great surgical achievement in America was that of vaginal plastic surgery, beginning with the treatment of bladder fistulae by Marion Sims. The Women's Hospital, in New York, was opened in 1855, by this great Alabama surgeon. Sims' principles and methods were speedily adopted, not only in America but throughout the world; and his most illustrious disciple was Thomas Emmet.

These, then, were the two great paths, the one first travelled by McDowell and the other by Marion Sims along with which our special surgery in America has developed.

Obstetrics is also included here, for these two are co-partners from the very nature of the business. In America the history of obstetrics will always be associated with the name of Oliver Wendell Holmes, for he first recognized the contagious nature of puerperal fever, and, as it were, pointed the way for Semmelweiss, Pasteur and Lister. Gradually obstetrics was emancipated from the hands of the midwives, and released from prejudice, false modesty and tradition. Fierce objection was made at first to the use of ether during labour, as "it made the patient drunk, and no self-respecting woman would place herself under such an influence." Oddly enough, ether was first used in labour by Sir James Simpson, in 1847, and only later, in the same year, by Keep and Channing, of Boston.

Caesarean Section was first performed in America by John Lambert, at Newton, Ohio, in 1827, but it was only after the appearance of Saenger's monograph, in 1887, that the elective operation was undertaken.

Tarnier, of Paris, was the first to employ antiseptics in obstetrics, in the form of Lister's carbolic solution. Though Lister published his first report in 1867, it was only after the vindication of his work, by Robert Koch, in 1876, that his principles found acceptance in America.

In this year the American Gynecological Society was founded; and since that time obstetrics and gynecology have been wonderfully developed. The history of this progress in America is all written in its Transactions.

As we have seen, it is the work of three centuries, and during this time, America has made large and generous contributions, for she has given to the world anaesthesia, and rich gifts of surgical achievement. For the future, we must concern ourselves with special thinking and research. For it is only with the right conjunction of special thought with action, of science with art, that we can become a growing-point, the great growing-point of the coming century. It is by taking thought that we shall now add to our stature.

Abstracts from Current Literature

SURGERY

Diagnosis and Treatment of Intrathecal Tumours of the Spinal Cord. Thorburn, William: B.M.J., Jan. 14, 1922.

The subject is discussed because the writer fears that intrathecal tumours of the spinal cord are not readily recognized by the general body of the profession so that many of these tumours are allowed to run untreated their inevitable course to death.

He illustrated his remarks by showing two patients. The first a male aged 43 gave a history of indefinite pain below the left costal margin while in an army hospital convalescing from influenza in 1918. At first the pain was felt only in the mornings but gradually became more constant. He was discharged from the army March 1919 with a diagnosis of lumbago. From then until October 1919 he noticed a gradual increasing weakness of the left leg. About a month later the right leg became weak also, so that he was forced to give up work. By February 1920 he was entirely confined to bed through weakness. In March 1920 when the writer first saw him the patient could neither walk nor stand unsupported. When assisted to walk there was noted an extremely spastic gait more marked on the left side.

There was no marked atrophy but the left leg was a little thinner than the right. The sense of touch was fairly accurate throughout but there was a noticeable delay in response. The sense of heat, cold and pain were lost in the lower limbs and as high up as two inches above the umbilicus. Knee jerks exaggerated. Marked ankle clonus left. Plantar reaction was extensor. Abdominal and cremasteric skin reflexes were sluggish. Bladder and rectum normal. Pain, of the girdle type, was sufficiently severe to require nightly doses of opium.

A diagnosis of intrathecal tumour was made on the essential feature of the clinical history namely the pain of varying intensity associated with remissions which had not been localized in the back but had extended along one or more spinal segments. Secondarily on the gradual onset of paraplegia.

At operation a tumour 3 c.m. by 1.5 c.m., said to be "a fibroma of rather vascular and cellular type," was removed from the left anterior surface of the cord at the level of the 9th dorsal vertebra. The patient was able to walk with a stick six weeks later and eventually made a complete recovery.

The second case was that of a male aged 22 years who had been in good health until October 1920. The first thing noticed by the patient was a disagreeable sensation which he described "as if his toes were tied together." Weakness and incoordinated movements of the legs gradually developed. In December 1920 when the writer first saw him paraplegia was almost complete. Knee jerks and ankle clonus markedly increased. Anaesthesia was fairly marked and extended nearly to the waist line. Plantar reaction was flexor.

This the writer describes as the blurred image of the intrathecal tumour. Paraplegia was gradually increasing. The reflexes were those of a transverse lesion of the cord except for the plantar reaction. Pain had entirely disappeared and had never been severe.

An exploratory operation showed meningeal adhesions with slight restriction of the spinal cord about the level of the seventh dorsal vertebra. The spinal canal was opened and the adhesions separated. The patient made an uninterrupted and complete recovery.

In the writer's own words this case illustrates three points "first the great importance of exploring doubtful cases of transverse lesion of the cord—that is to say, all cases which are not obviously hopeless; secondly, that you are more likely to do good than harm should a diagnosis of a thecal tumour prove incorrect; and thirdly, because I hold that there is a strong probability that many early cases of transverse myelitis may be arrested and cured by incision and drainage of the dura mater."

A. ROSS

The Value of Freedom and Exercise After Operations. Rowlands, R. P.; B.M.J., Jan-14th, 1922.

The necessity for rest after operations has in the writer's opinion been greatly exaggerated. He has from observation and experience gradually shortened this period and believes that he has thereby helped his patients.

Rest must be maintained while there is pain and while there is an exhausted nervous system but early movements must be begun as soon as possible because they increase the heart action, accelerate the blood stream, and thereby lessen the post-operative tendency towards mental depression, thrombosis, embolism, hypostatic pneumonia, adhesions of the viscera, muscular atrophy and constipation without interfering in any way with the healing of the wound.

Taking appendectomy and the radical cure for hernia as examples he allows his patients to move in their beds as much as they like from the first; the freedom of their room on the fourth day; their bath on the seventh, and a short walk or drive on the tenth.

A. ROSS

Closure of the Abdomen Without Drainage After Cholecystectomy and Choledochotomy. Richter, H. M., Surg. Gyn. and Obstet., Feb. 1922.

The author has closed the abdomen without drainage in infective conditions associated with frankly developed peritonitis wherever he has been able to remove the source of continuous infection, except where peritonitis was far advanced.

Operation upon biliary structures has the advantage over intestinal surgery of dealing with far less infective material.

In the operation of cholecystectomy, because the bile tension is far less that the arterial tension

of a small vessel, fine catgut is ample in ligating the cystic duct to prevent leakage of bile. The use of heavy ligature material partakes of the nature of an objectionable foreign body.

No attention other than a temporary packing is paid to the raw edges of the liver bed left after the removal of the gall bladder since its sides tend to fall together and any foreign body used as drainage material will cause dense adhesions.

Because of the known tolerance of the peritoneum the effect of the bile leakage from the liver surface is of little clinical importance.

Drainage material, if placed in contact with the ligated cystic duct may cause a biliary fistula, because it prevents primary union which is the insurance against leakage.

Closure of the abdomen without drainage is contra-indicated.

1.—Where there is persistent oozing. Here gauze packing is necessary.

2.—Where there is active infection or actual suppuration outside of the gall bladder.

In operations of choledochotomy, the common duct may be sutured and closed without drainage, the advantages being analogous to those in cholecystectomy.

The peritoneal coat must always be included in the line of suture and not sufficiently damaged as to render it useless.

The suture materials and needles must be of the finest size. Rope-like suture material will cut through, permitting bile leakage.

Closure of the abdomen is contra-indicated in jaundice or acute infections.

B. F. MACNAUGHTON

Obstetrical Paralysis of the Peroneal Nerve. Whitman, Armitage: Surg. Gyn. Obst., Jan. 1922.

In this case a woman of forty-three, at her ninth confinement,, had much difficulty necessitating the use of forceps in the delivery of a 10½ lb. baby. Immediately on her return to bed the patient was conscious of great pain in both legs, and inability to move the left foot. The pain gradually wore off, and on the eighth day post-partum she attempted to get up, but was unable to walk because of the left foot giving way under her. Relief was sought at Dr. Royal Whitman's clinic at the Hospital for the Ruptured and Crippled. Her condition was one of paralytic varus with drop foot. Although the condition is termed peroneal or external popliteal paralysis it is evident from the findings that Dr. Whitman's diagnosis is injury to the trunk of the sciatic in the pelvis, probably by forceps or the infant's head, inasmuch as the whole leg below the knee was at first paralyzed. Dr. Whitman, however, discusses the condition which was simulated, i.e. injury to the peroneal nerve at the knee by the use of the leg-holder. The paralysis was present a year after injury.

J. A. NUTTER

MEDICINE

The Effect of Syphilitic Infection on the Heart. Stobie, William: Quart. J. Med., Oct. 1921.

The author deals at some length with the pathological and clinical manifestations of syphilis as it affects the heart. He finds that the infection may occur in the congenital and acquired forms of disease either at an early or late stage. The anatomical lesions include gummata, general fibrosis and aneurysmal dilatation of the heart, slight thickening of the endocardium, with coronary arterial disease and pericardial effusion with spirochaetes.

The clinical pictures showed that aortic valvular disease was the most common. Mitral disease with stenosis was found in three out of fifteen cases. Occasionally the Stokes-Adams syndrome was found. Sudden death occurred in two patients, in one of whom a gumma of the endocardium was found at the autopsy, and in the other a thickening of the general endocardium. In these latter cases the heart's action had been noted to be strong in comparison with the pulse, and the symptoms complained of were anginal and fainting attacks wih precordial pain and shortness of breath.

C. F. MARTIN

Some Aspects of Exophthalmic Goitre. Campbell, J. N. H.: Quart. J. Med., Oct. 1921.

The paper deals with cases treated in Guy's Hospital from 1908-17, in all 127 cases, of which 89 were traced to the time of their death, or for varying intervals from 4 - 16 years. The author regards exophthalmic goitre as a clearly defined condition, in which the majority of the following signs are present within a short time of

the onset of the disease: exophthalmos, enlarged thyroid, tremor, tachycardia, increased metabolism, increased sweating and undue nervous excitability. Arrhythmia is frequently present. Some severe mental changes, and bouts of gastric crises and diarrhoea are characteristic of the disease, but are not so constantly present.

The author suggests that the term "hyperthyroidism" should be confined to a much less marked condition, in which two or three only of these signs are present; it is less dangerous and more easily cured, and does not tend to develop into true exophthalmic goitre. The condition is found generally in older women. Exophthalmic goitre is four times more commonly found among unmarried than among married women, and nearly 70 per cent occur in unmarried women of child-bearing age. The signs and symptoms are in the main those of over-secretion of normal thyroid substance, and it would seem that associated with this, there are changes in the internal secretion of the ovary and other glands. During an attack of exophthalmic goitre, the resistence to infection is very much diminished.

With regard to prognosis, this series has shown that 40 per cent. are almost cured, 30 per cent. so much improved that they return to a normal way of life, while 15 per cent. are not much improved, or become worse, and 15 per cent died. The average duration of the illness is about three years. In most of the fatal cases death occurred within the first year. The surgical treatment is discussed. As a result of thyroidectomy, there is in most cases a great improvement, but the author insists that the final result has not proven to be greatly superior to that obtained by medical treatment. Nevertheless, it would seem that, after allowing for the operative mortality, there appears to be a much smaller proportion of fatal cases. Where a long period of rest is not possible, cases may be saved from permanent injury to the heart by operation.

C. F. MARTIN

Gonorrhoeal Infection of the Nervous System. O'Connor, E. Quart. J. Med., October 1921.

The author endeavours to establish a rough classification of the parts of the nervous system mainly affected. He is unable to determine whether the nervous system is usually infected through the lymph-channels or the blood, or in which cases the gonococcus and its toxin are respectively responsible. He concludes that gonorrhoea has a tendency to produce slight psychiatric manifestations, which may be due to a feeble toxemia. Obstinate chronic cases evolve neurasthenia and hypochondriasis, and a tendency to grave melancholia. Occasional cases of meningomyelitis have been found, but there seems little evidence that multiple neuritis arises from this form of infection. Minor cases of neuritis and neuralgias are relatively common.

Speaking generally, no gonorrhoeal complication can be rigidly attributed to the primary causal organism alone; on the contrary, he stresses the point that every complication has a complex etiology.

C. F. MARTIN

The Serum Prophylaxis of Measles. McNeal, M.D., J.A.M.A., Feb. 4th, 1922.

Statistics show that about 91 per cent. of deaths from measles occur in children below six years of age, while only 8 per cent. die in cases between six and fourteen years.

In institutions caring for small children the death rate may be high, as much as 37 per cent. having been reported.

The prevention of exposure to measles is difficult owing to the 3 or 4 days of uncharacteristic prodromal symptoms. Preventative measures of some kind seem then desirable.

It has been found that the intramuscular injection of 15 cc. of serum derived from a person in the tenth or later day of the disease will prevent infection in those exposed while many cases innoculated with a lesser amount 3 to 4 cc. developed an attenuated form of the disease.

The serum of measles patients taken before the 7th day has little or no immunizing properties. On the other hand, immune serum given after the seventh day of the disease produces little or no effect.

The immune serum is usually derived from patients three or four days after the fever has disappeared and may be preserved for subsequent use by the use of 0.01 per cent. tricresol. These preventative measures are of particular value in institutions where there are delicate and poorly nourished children.

A. H. MACCORDICK

Experimental Innoculation of Human Throats With Virulent Diphtheria Bacilli. Guthrie, S. C., Marshall, B. C. and Moss, W. L. Bull, Johns Hopkins Hosp. Dec. 1921.

Diphtheria bacilli obtained from the throat of an otherwise healthy carrier, and proven to be virulent for guinea pigs, were innoculated into the throats of eight volunteers. Four of the eight had previously given a positive Schick test and all four developed clinical diphtheria. The other four gave negative Schick tests and none developed the disease after innoculation.

All of those innoculated with the exception of one who had given a negative Schick test became carriers.

The authors have found that the administration of antitoxin does not always prevent the carrier state. They also believe that the guinea pig test can be relied upon to estimate the virulence of diphtheria bacilli.

Diphtheria bacilli of a virulent type in the throats of otherwise healthy carriers can produce clinical diphtheria in susceptible individuals.

A. H. MACCORDICK

The Prevalence of Free Hydrochloric Acid in Cases of Carcinoma of the Stomach. Hartman, Harold R., Am. J. Med. Sc. Feb. 1922.

The author points out the habit we have acquired of considering achlorhydria as a diagnostic sign of carcinoma of the stomach, until at present one hesitates to make a diagnosis of carcinoma in the presence of an appreciable amount of free HC1. in the gastric contents.

A study was made of the cases of gastric carcinoma occurring at the Mayo Clinic during the years 1918, 1919, 1920. During these years, there were 551 patients with gastric carcinoma and 80 patients with carcinomatous ulcer operated on. Forty-five per cent. of the cases were diagnosed ulcer, 41.25 per cent cancer, and in 12.15 per cent the diagnosis was suspected gastric malignancy.

The normal amount of free HC1. was estimated at from 20 to 40. With regard to location, in 51.85 per cent of pyloric lesions, achlorhydria was present. In 5.05 per cent of pyloric lesions there was hyperacidity. In the cardiac portion, the achlorhydria was 61.54 per cent and the hyperacid 5.12 per cent from which it is apparent that the location of the lesion does not influence the degree of acidity. In all cases recorded 21.95 per cent had a hyperacidity, that is to say, hyperacidity existed in more than one case out of every five.

When the cases of gastric ulcer undergoing malignant changes are included, it is found that 26.93 per cent, or about one case out of every four had normal or hyperacid findings. Over 42 per cent had some free HC1. present, which means that one should expect to find free HC1. present in about every other case.

In a word, therefore, achlorhydria is present in a little less than one half the cases of carcinoma of the stomach, and normal or hyperacid values in more than one fourth.

The acid values are the highest readings obtained by the fractional method.

J. G. BROWNE

A Study of Pneumonias and Types of Pneumococci. Mulloch, Archibald; Quart. J. Med. Jan. 1922.

This very carefully prepared article deals with cases that have been studied both clinically and bacteriologically, taking note of the various complications that arose presumably due to different types of pneumococci. The results of the work show the relative incidence during a year and a half at one hospital of various types of pneumococci in lobar pneumonia. An effort was made to determine the type of organism as early as possible in order that specific treatment might be begun early. The average duration of the disease before admission was 4.3 days in the case of 53 lobar pneumonias. The data are concerned only with the types that occur in England. Rapid cultural methods were preferred to those of the urine precipitin test. The most satisfactory method of all is that of mouse innoculation, in which agglutination can be carried out after 12 hours.

In the 65 lobar cases studied, the proportions of the different types were similar to those in America, except that much fewer of Type III were found, while more cases were due to a typical Type II sub-group. At least one-third of all lobar cases in England are due to Type I, and this is the group for which specific antiserum has proved of benefit. The death rates in all but Type II cases were lower than in America.

As regards complications, these were more

numerous in the Type I group than in any other.

Pfeiffer's bacillus may grow out in the mouse or on blood agar innoculated with washed sputum of pneumonia cases, but it was found much oftener in association with Type IV both in lobar, and especially in broncho-pneumonic cases than with any other types.

Type I was isolated from cases of pneumococcal peritonitis; twice in fatal cases in children, with the generalized septicaemic form; and twice from adults (with no septicaemia), who recovered.

The writer very properly pays little attention to determining the relative frequency of lobar and broncho-pneumonia.

C. F. MARTIN

Observations on the Circulation and Respiration in a Case of Paroxysmal Tachycardia. Barcroft, Bock and Roughton; Heart, Vol. IX, No. 1, December 1921.

This research deals with the circulatory condition existing in paroxysmal tachycardia. It was found possible to measure the quantity of blood passing through the chest per minute; combining the minute volume with the pulse, the systolic output is obtained. In addition to this, the determination of the oxygen concentration of the arterial blood and venous blood were made, throwing some light on the effect of rapid and shallow respiration on the oxygen content of the arterial blood.

In the patient studied, the attacks were abrupt in onset and sudden in their termination. They were characterized chiefly by dyspnoea, abnormal heart action, cyanosis, gastric disturbances, sweating and weakness. In their study the authors were unable to make a complete series of determinations in any one attack. Their conclusions were as follows:-

In two attacks of paroxysmal tachycardia, in which the pulse was upwards of 200, the minute volume sank from 5-6.1 litres to 2.8-2.1 litres per minute, or roughly to a half to a third of the normal value.

The degree of ischaemia was particularly marked in the skin, as shown by analysis of the blood from the basilar vein.

There was no reduction in the saturation of the arterial blood, but if anything, a rise.

The depth of respiration was reduced to nearly half the normal, while the rate was about doubled.

The systolic output - 77.5 - 12.9 cc.

The total oxygen consumption of the body was also considerably lower during two of the attacks.

C. F. MARTIN

Observations on the Action of Quinidine—with Special Reference to Auricular Fibrillation. Lewis, T., Drury, Iliescu and Wedd; Heart, Vol. IX, No. 1, December 1921.

The employment of quinidine has recently come much into vogue, especially for its action on auricular fibrillation. A very careful series of observations was made by the authors on the dog's heart and elaborate tables of their observations were prepared to estimate in general the various functions which are affected by the use of the drug.

Quinidine sulphate, it was found, when given to dogs in doses comparable to those used clinically, has the following effects:-

1. It lowers the S-A rate considerably.
2. It reduces the rate of conduction in auricle and ventricle; it depresses the A-V conduction.
3. It lengthens the absolute refractory period of the auricle muscle.
4. It causes a partial paralysis of the vagus.

The first three of these effects result from a direct action on the muscle; they are produced simultaneously and are recovered from simultaneously. The nature of the action of quinidine appears to be in a large part independent of the rate of beating; at higher rates of beating it is reinforced by the partially refractory period factor. A curious reversed action of the vagus upon A-V conduction is described as happening under quinidine. The effects of the drug upon clinical fibrillation of the auricle are explained, if this last effect is regarded as fundamentally due to circus movement. A sufficient lengthening of the refractory period, by reducing the responsive gap, will bring the circus movement to an end or it will slow the circuit movement. An increased rate of ventricular beating under quinidine in auricular fibrillation is ascribed to the lower rate of auricular beating in part and in part to the paresis of the vagi.

C. F. MARTIN

Some Observations on Epilepsy. Sargent Percy, C.M.G.; Brain, Vol. XLIV—Part III.

In his address before the Section of Neurology of the Royal Society of Medicine, the author deals with the question of operative procedure on various types of epilepsy. In his opening remarks, he refers with some emphasis to the training required by one who would deal with the surgery of the nervous system. He differs from those who hold that the surgeon who concerns himself with operations on the nervous system should be his own neurologist; this, he considers, is quite unpracticable, for he who would be a neurologist should also be a general physician of wide experience, and he who would concern himself with the surgery of the brain should also be very familiar with general surgery. Mr. Sargent holds that the nervous system is not a suitable field for surgical specialism in the more restricted sense of the term.

The difficulty with the surgical treatment of epilepsy arises through our ignorance of the etiological factors in a fit—whether the convulsion be focal or not, in origin; there would seem to be no essential precipitating cause common to all forms.

The author deals at some length with epileptic fits which have arisen from gunshot wounds of the head, and those he divides into three main groups:-

1. Recent lesions following a local contusion, associated with haemorrhages and oedema.

2. Inflammatory lesions, due to recrudescent sepsis.

3. Cicatrices binding the scalp to the brain and membranes through a cranial defect.

In these three cases it would seem that surgical interference is justified not only on the ground that reasonable explanation exists of the mechanism by which the fits are evoked, but also because there is sufficient evidence to show that fits can either be abolished or reduced in number and severity by an operation, which either removes entirely or modifies the local exciting cause.

He next deals with the treatment of fits other than those of traumatic origin, whether associated or not with local lesions of the brain. These he divides into three groups:-

1. A lesion easily localized and giving some evidence as to its nature (tumours, abscesses, gummata). The author observes that while any of these lesions may constitute the starting point of an epileptic attack, it must not be forgotten that there is no gross lesion, traumatic or otherwise, which necessarily causes the fits. On the contrary, the proportion of patients with any such lesion who develop fits is small. To say that a lesion irritates the brain creates fresh difficulties by raising the question of the exact meaning of "irritation." The surgical treatment of this group is directed towards dealing with the focal lesion and an effort at its removal. Where this can be easily done, the outlook is good. On the other hand, when an abscess has to be drained, fits are less likely to be abolished.

2. This group includes cases of a focal character in which the nature of the lesion can only be determined by exploratory operation. Such exploration is not always productive of results; at all events, the results are not so uniformly good as to recommend cortical excision unless the localization has been carried out by electrical excitation.

3. The third group of so-called idiopathic epilepsy presents to Mr. Sargent no excuse whatsoever for surgical operation. Except where hope triumphs over experience, the surgeon must be a veritable optimist indeed who would continue to treat idiopathic epilepsy by surgical means

C. F. MARTIN

The Association

ANNUAL MEETING, WINNIPEG, JUNE 20th-23rd, INCLUSIVE

The Local Committee are striving to make this meeting not only a most valuable one from a scientific standpoint but also one in which agreeable social features will be amply provided for.

REMEMBER THE DATES

June 20th-23rd inclusive

The first day is intended primarily for the transaction of business but the entertainment programme commences that date also. Wednesday, Thursday and Friday are to be devoted to Section Meetings in the mornings and general sessions in the afternoons. The Committee are determined that all sessions shall commence *promptly* at the specified time and the arrangement of programme is such that the sessions shall not be unduly long.

A well rounded programme is in preparation. Dr. L. F. Barker of Baltimore is to give the address in Medicine and Dr. J. M. T. Finney, also of Baltimore, has been asked to give the address in Surgery. The Surgical Section will have a programme representative of all parts of the Dominion, among others Drs. Cole, of New York, McKechnie of Vancouver, Starr and Primrose of Toronto, Bazin and Gurd of Montreal will take part.

Among those contributing to the medical programme are Drs. Brown, Banting, Gwynn, Goldie and McPhedran of Toronto, Drs. C. K. Russell, C. F. Martin and Finley of Montreal, Dr. Jas. Miller of Kingston, Dr. H. C. Steeves, New Westminster, Dr. Kenneth MacKenzie, Halifax, Dr. Campbell Howard of Iowa City, Iowa, Dr. D. A. Stewart, Ninette and Drs. C. Hunter, A. J. Burridge and F. A. Young, Winnipeg.

The Eye, Ear, Nose and Throat Section promise a valuable programme and a special effort is being put forth to make the General Sections particularly interesting and valuable.

Instead of a formal Pathological Section, short morning demonstrations are to be held in the Museum. An extensive exhibit of specimens is being arranged and some very valuable contributions will be made.

All sessions will be held in the Royal Alexandra Hotel, Scientific and Commercial exhibits will be in close proximity to the rooms in which meetings are to be held.

Hotel accommodation will be ample. Those desiring to secure accommodation in the Headquarters Hotel will do well to communicate *early* with Dr. Gordon S. Fahrni, of the Hotel, Information and Transportation Committee, 507 Boyd Building, Winnipeg. Rooms may be secured at the rates of $2-$5 for single room without bath or $3-$8 with bath. Double rooms at proportionate rates.

It is expected that arrangements will be consummated with the railways whereby round trip tickets will be available at one fare and one half.

The Canadian Society of Anaesthetists and the Canadian Radiological Society are holding their annual meetings in Winnipeg during the period June 20th-23rd, 1922. The presence of these two important organizations will add much to value of the C.M.A. Meeting. Arrangements are being made for eminent members and guests of these Societies to take part in the Sessions of the Canadian Medical Association.

It is the earnest wish of the Local Committee that every medical man in Canada will strive to come to the Meeting. Winnipeg is situated almost exactly midway between East and West. We should have and expect a record attendance. Every effort will be made to make the Meeting and the stay in Winnipeg worth while and each individual may rest assured that a kindly welcome awaits him.

The profession of Winnipeg and of the West generally, welcomes this opportunity of enter-

taining the C.M.A. and reaffirming the bonds of friendship that have marked previous meetings of the Association.

BULLETIN No. 2.
ENTERTAINMENT COMMITTEE

The Annual Meeting will be held in Winnipeg—June 20th-23rd, 1922.

DON'T FORGET THE DATE

What the Meeting will be: A Recreational Free-for-All. A gloom banishing golfing swatfest; a chance to renew the friendships of youth, and to compare with old associates, changes in girth and alopecia. An opportunity for the Aesculapians of the East to behold Greater Canada, to feast their eyes upon the wonderful prairie country, the fields of golden grain, and the incomparable scenery of British Columbia.

SPECIAL SCIENTIFIC ATTRACTIONS

For *The Oculist.*—A recently discovered specimen of Porcus Caecus.

The Ornithological Oto-Laryngologist.— An unusually large collection of the species Hirunda Sicca.

Bring your Golfing tools—your wife—an ice cap, and the spirit of youth and fraternity Remember the date—June 20th-23rd, 1922.

Congenital Syphilis—JOSEPH S. LAWRENCE, Albany, N. Y., assisted in making a survey of the families from which syphilitic patients came to Ward's Island. Among the 254 immediate relatives of seventy-five patients, syphilis was established in fifty cases, or 19.6 per cent. The inmates of a large number of orphanages were also examined. Of 11,205 persons ranging in age from 2 to 21 years, with an average of 10 years, 1.1 per cent of all gave a four plus reaction to alcoholic and cholesterinized antigens. Defects were most frequently noted among those with positive Wassermann reactions. After the results of the blood examinations were known and the children had been grouped as to whether they had a positive, doubtful or negative reaction, it was found that those with clinical symptoms suggestive of syphilis were not all in the positive group, but that many were included with those having a doubtful blood reaction. It was therefore decided to make a careful survey of the immediate relatives, when possible. The families of fourteen children with positive reactions, of 263 children with doubtful reactions, and of sixty-six children with negative reactions were investigated. It is shown that when the children had positive blood tests, 82 per cent of the relatives tested were positive, or, in other words, including the fourteen children originally examined, twenty-three cases of syphilis were found among twenty-five individuals from six families. The findings in the doubtful group were equally interesting. Of the 173 relatives tested, twenty-three, or 13 per cent., were found to have definite four plus Wassermann reactions to specimens of their blood, while the reactions for the children themselves were at best classified as doubtful.—Jour. A. M. A., Feb. 25, 1922

Oxygen Inflations of Peritoneal Cavity in Tuberculous Exudative Peritonitis—ARTHUR STEIN, New York, reports what he believes to be the first case to be reported in the United States of an apparent cure of tuberculous peritonitis of the exudative type by the sole means of therapeutic pneumoperitoneum. The patient was a woman, aged 32, who five months after a laparotomy manifested acute symptoms of tuberculous exudative peritonitis. A roentgenogram was taken following artificial pneumoperitoneum. Roentgenographically, the case presented evidence of tuberculous peritonitis. The oxygen which was injected at the time of the pneumoperitoneal roentgen-ray examination was not withdrawn. Thirty-six hours later there was still some oxygen present. The whole procedure did not cause the patient the slightest discomfort, and the improvement in her general condition after this single inflation was most marked. Three additional injections were made, two, four and six days later. The patient, apparently, made a complete recovery.—Jour. A. M. A., Mar. 14, 1922

News Items

ONTARIO

FORTY-SECOND ANNUAL MEETING OF THE ONTARIO MEDICAL ASSOCIATION MAY 30, 31, JUNE 1 AND 2, 1922

THE forty-second Annual Meeting of the Ontario Medical Association is to be held this year in Toronto on the above dates. Preparations for the meeting are fairly well completed, and the members are assured of an interesting and instructive programme.

Dr. Macfie Campbell, an outstanding Psychiatrist of Boston, will present the opening address in Convocation Hall on the evening of Monday, May 29th, choosing for his subject, "The Modern Conception of Mental Disease." This meeting will be open to the general public, as it is believed that many persons outside the Profession will be keenly interested in what Dr. Campbell has to say.

University College will be the headquarters of the Association during the next four days, splendid accommodation therein having kindly been placed at the disposal of the Association by the University authorities.

Tuesday, May 30th, is Business Day, the deliberations of the Directors and the Committee on General Purposes, the latter being the Parliament of the Association, occupying the morning and afternoon.

The Round Table Evening, with dinner being served at 6:30 P.M. will be held on Tuesday, May 30th, at the Academy of Medicine, 13 Queen's Park. This function has become one of the most popular features of the annual meeting, and the evening's discussion which will touch upon the relation of the Profession to the Public, and also on the subject of Drugs, from a point of view hitherto little discussed by the Profession, will no doubt appeal to a large number of the members.

Wednesday, Thursday and Friday will be largely devoted to the scientific sections, the programme for which will shortly be announced.

The Association Dinner, to which the ladies are invited, will be held at the King Edward Hotel on Wednesday night, when the address of the President, Dr. F. J. Farley, will be delivered.

Dr. and Mrs. Herbert Bruce have very kindly invited the Association and its visitors to be their guests at a garden party on Thursday afternoon. Thursday evening is being left free for class reunions and private entertainment.

The various sections believe that they have gathered together a programme which will please the Profession, and it is anticipated that the attendance will be the largest in the history of the Association.

The Secretary of the Association, Dr. T. C. Routley, of 127 Oakwood Ave., Toronto, will be glad to answer any enquiries regarding the meeting or secure accommodation for any intending visitors.

STUDENTS' NIGHT AT ACADEMY OF MEDICINE.—Considering that it was not only necessary but also helpful to the men themselves that the graduating class should know the aims and objects of the Medical Society and of Libraries and Medical Associations, the President and Council of the Academy gave a reception to the fifth year students on the night of Friday, March 3rd. The aims of the Academy were set forth by the President, Dr. Noble. The value of good records and a good library were detailed by Dr. Primrose. The relation of the physician to the Medical Societies was pointed out by Dr. G. S. Young, and some original descriptions of diseases as found in medical practice were delightfully put forth by Dr. J. H. Elliott. After the programme, the various collections of books and belongings of the Academy were shown by various of the Fellows. Practically the whole of the graduating class was present at this meeting,—a meeting which has the unique distinction of being the first occasion at which an Academy or College has recognized that its duty and pleasure must include certain performances which introduce the younger minds to the conditions of medical life which they may be asked to consider later on. The step is a step in advance, a procedure which should make easier the work of medical education throughout the province, for it can be safely said that one of the most positive causes of the lack of interest so often met with when the question of Medical Societies is brought up in the provinces is that the majority of men with whom one strives to get in touch have been allowed to graduate without the thought or the idea of Medical Associations or medical gatherings for their future benefit ever having been put before them.

The Academy is to be congratulated on its generosity and farsightedness; to let one hundred and fifty students know that an old organization is interested in their future is a step the far-reaching results of which will be hard to over estimate.

Further meetings of the Academy for March were the stated meeting for March 7th at which the principal address was one by Sir Bertram Windle, F.R.S, on "Medicine and Surgery in Early Mediaeval England." March 9th, Section of Obstetrics and Gynaecology; March 14th, Section of Medicine, Symposium on Arteriosclerosis; Section of Pediatrics, March 16th, Clinical Evening at Hospital for Sick Children; March 21st, joint meeting of Section of Pathology and Surgery; March 28th, Section of State Medicine.

DR. CHAS. W. BURR of Philadelphia addressed the Hamilton Medical Society on Wednesday, March 1st, on questions of Neurology and Psychiatry; on March 2nd, Dr. Burr conducted a Neurological Clinic at the Toronto General Hospital.

DR. D. E. S. WISHART sailed for England for further Post Graduate work in Otolaryngology in Edinburgh after two years of service in the Massachusetts Eye and Ear Infirmary and special work in Philadelphia in Broncho scopy.

COUNTY SOCIETY MEETINGS.—The St. Thomas Medical Society met on January 6th and was addressed by Dr. Charles H. Gilmour of Toronto, the subject of his discourse being "A Study of the Various Means Available for Establishing Diagnosis in Diseases of the Kidneys, Ureters and Bladder."

At the meeting of March 3rd, Dr. D. King Smith of Toronto talked upon the "Commoner Skin Diseases, their Treatment and Diagnosis." Good attendances and discussions were recorded for both meetings.

THE Sault Ste. Marie Medical Association staged two meetings in January, the first of a series of six addresses arranged for by the Ontario Medical Association. On January 7th, Dr. Wm. Goldie of Toronto presented a paper on "The Interpretation of the Signs and Symptoms of Gastro-Intestinal Disease." On January 28th, Dr. E. Stanley Ryerson of Toronto lectured on "The Pathology of the Gall Bladder and Bile Ducts and its Relation to the Clinical Manifestations of Disease, and the Surgical Treatment Indicated." There were good attendances at both lectures.

THE Brant County Medical Society met on the evening of January 12th and was addressed by Dr. F. W. Marlow of Toronto on the subject of "Symptomatology of Pelvic Disease." Active appreciation was expressed of the efforts of the O.M.A. in respect to the system of lectures now being instituted throughout the Province.

PERTH County Medical Society met in Stratford on the evening of Wednesday, January 18th. The address of the evening on "High Blood Pressure and Arteriosclerosis" was given by Dr. John Oille of Toronto.

THE North Waterloo Medical Society met in Kitchener on Friday, January 20th. This was one of a series of six meetings being conducted by the North Waterloo Society, the speakers for which are supplied by the Ontario Medical Association. At this meeting, a very practical address was given by Dr. Geo. S. Strathy of Toronto on "The Differential Diagnosis of Pain in the Back."

AN organization meeting for the County of Renfrew was held in Renfrew on Friday, January 20th. Dr. T. C. Routley, Secretary of the Ontario Medical Association outlined the various steps to be taken to organize a County Society, and, before the close of the meeting, it was resolved that there should be a Renfrew County Medical Society in active affiliation with the Ontario Medical Association. Dr. W. E. Gallie of Toronto gave a very interesting and practical talk on "Fractures," demonstrating the application of plaster splints to various parts of the body.

DR. A. PRIMROSE of Toronto addressed the Sault Ste. Marie Medical Society on Saturday, February 11th, choosing as his subject "A Clinical Study of Tumours of the Breast"

DR. J. H. ELLIOTT of Toronto addressed the South Waterloo Medical Society in Galt on Wednesday, January 25th. The subject of his address was "The Problem of Infection in Tuberculosis and its Importance in the Prevention and Treatment of Tuberculosis." An excellent discussion followed his presentation.

THE Middlesex County Medical Association met in London on February 1st. An address was given by Dr John Oille of Toronto on "High Blood Pressure and Arteriosclerosis."

THE North Bay District Medical Society was addressed on the evening of January 17th by Dr. C. L. Starr of Toronto on "Acute Abdominal Conditions of Childhood."

THE Peterborough Medical Society held its regular fortnightly meeting on Thursday, February 2nd, and was addressed by Dr. Jas. Miller of Queen's University, on the subject of "Histological Changes in the Lung in Pulmonary Tuberculosis."

DR. L. J. AUSTIN, Professor of Clinical Surgery at Queen's University Medical School, addressed the Ottawa Medical Society at Ottawa on Friday, February 3rd, on "The Pathology, Diagnosis and Treatment of Gall Stones." A very active discussion followed the address, the following points especially attracting attention:—(1) recurrence of Gall stones after operation. (2) Recurring symptoms after operation, in cases where the Gall Bladder had been removed. (3) The value of *x*-Ray Diagnosis. (4) The value of the Meltzer-Lyon Duodenal Examinations.

THE Twin Cities of Port Arthur and Fort William, representing the Thunder Bay Medical Society with a membership of nearly thirty Doctors, shows a membership in both the Ontario and Canadian Medical Associations of 100%.

The members of the Thunder Bay Medical Society can justly be proud of the record they have established. The Ontario Medical Association extends congratulations and greetings to its most remote branch, which, though upwards of one thousand miles distant from the headquarters of the Association, presents 100% membership in the Association. This is a record which all other parts of the Province might endeavour to emulate to the satisfaction and advantage of themselves and the Association as a whole.

NOVA SCOTIA

THE OSLER MEDICO-HISTORICAL CLUB OF HALIFAX.—This club, which was started on the initiative of Prof. A. G. Nicholls of Dalhousie University, has been in existence for rather more than a year. Composed of a band of twelve or thirteen congenial spirits, it has met monthly during the past academic season Its objects are to stimulate an interest in the historical and literary side of Medicine; to acquaint the members with the great scientific currents in medical thought; and to foster the use and development of the university library.

The machinery is of the simplest. The essayist for the evening is the chairman. He abstracts his own paper for the minutes, and reads his minutes on the occasion of the next meeting. An archivist is appointed whose duties are to collect and bind the productions of the members, and to deposit them in the university library. The subjects to be chosen must be biographical, historical, or literary, and in some way related to the evolution of Medicine. The members meet at one another's houses, and after a full discussion of the essay or subject presented at the meeting, the evening ends with refreshments. Frequently, the monographs presented are illustrated with books, pictures, and lantern slides.

Lady Osler, on the request of the founder, graciously gave her consent to the use of the name "Osler" as a designation for the Society, and, in addition, sent to it the

latest portrait of Sir William. Her kind thought was, it is hardly necessary to say, much appreciated by the members. So far the following papers have been presented:—

Thomas Willis, M.D., F.R.S., by Prof. Nicholls.
John Hunter, by Prof. John Cameron.
Daniel McL. Parker, by Dr. W. Alan Curry.
The Edinburgh School of Surgery, by Dr. Gerald Grant.
The Man who discovered the Circulation of the Blood, by Prof. D. Fraser Harris.
Sir James Y. Simpson and Anaesthesia, by Dr. M. D. Morrison.
Oliver Goldsmith and Oliver Wendell Holmes, by Dr. G. H Murphy.

The prospects for the Club are highly encouraging; all the meetings have been well attended, and the members are enthusiastic of the benefits and pleasure derived from them. It is hoped that the interest thus created in the subject of medical history, may result in the acquirement by the members, of books, pictures, relics, autographs, and other objects relating thereto, which may ultimately enrich the Medical Library of Dalhousie University, and help all to get away to some extent from the mere "bread-and-butter" side of professional work.

QUEBEC

Canadian National Committee of Mental Hygiene.—The Annual Meeting of the Committee was held at the Ritz Carlton Hotel, Montreal, on February 17th, over four hundred people being present. Addresses were given by Sir Vincent Meredith, Bart., Lady Byng of Vimy, Dr. C. K. Clark of Toronto, Dr. Hincks (Secretary) and Dr. C. K. Russel (Chairman of the Committee).

The work of four years was reviewed by the President, the outstanding features showing a most creditable result on the part of the Committee. New psychopathic hospitals had been built in various parts of the country; schools for the feeble-minded and clinics for epileptics established; the immigration laws improved, and the legislation altered to aid in the treatment of mental defectives and the insane.

Various provinces have granted liberally of Government funds to help the work of the National Committee, the western provinces being especially generous in their financial subsidies, *e.g.*, British Columbia has spent about a million dollars on new buildings; Saskatchewan has erected a new Mental Hospital at a cost of a million and a half; Manitoba has made provision for a clinic for the feeble-minded at Portage la Prairie, and is hoping to erect three psychopathic hospitals; Ontario has made a grant of $500,000 for a psychopathic hospital; in New Brunswick a similar institution is promised, and Nova Scotia has given liberally for the erection of two small mental hospitals. It was a regret of the Committee that hitherto the Quebec Provincial Government had been unable to provide money for either psychopathic hospitals or special clinics, but the Committee has approached the Premier with the hope of enlisting his sympathetic interest.

Among the features of the meeting was the address of Lady Byng, who assured the audience that nothing was nearer to her heart than the work of the National Committee.

Dr. Clark and Dr. Hincks set forth their views on the importance of the work of the Committee, and tried to draw the attention of the audience to the need for continued and sympathetic interest.

BRITISH COLUMBIA

The continued efforts of the B. C. Medical Association Executive to unify the profession in this province, have been most successful. A recent tour of Vancouver Island by the Executive Secretary, in which all towns, north of Victoria, were visited, resulted in every member of the profession in that district joining this Association, not reluctantly, but with avidity. A local subsidiary society was organized with Nanaimo as Headquarters. This Society will be known as 'District Medical Society No. 6. Dr. W. F. Drysdale was elected President, and Dr. T. J. McPhee, Secretary-Treasurer. With the exception of what will be known as District No. 7, that is the Prince Rupert District and points on the G.T.P., east, and a few other outlying places, the whole province has been covered.

The evident sincere desire of the medical men to get together and co-operate, in the real sense of that term, is most gratifying. The welfare of the individual and the profession as a whole, so far as this province is concerned, is being safeguarded, and already much needed reforms, particularly in regard to 'medical contracts' have been, or are being, brought about.

The interests of the Public are not being overlooked, and in this connection a province-wide health campaign has been started. Never in the history of this province has there been a keener desire evinced by the public for information concerning health matters. To supply this want the B. C. Medical Association are devoting the week commencing March 20th, to a series of public meetings throughout the province, when addresses on the following important subjects will be given:—

Tuberculosis, Cancer, Milk, Venereal Disease, and Preventive Medicine.

This campaign has received the hearty endorsation of public organizations, including the Health Bureau of the Board of Trade, the Canadian Club, the Kiwanis, Gyro and Rotary Clubs; also the Parent-Teachers Associations, the Local Council of Women and many others.

The regular monthly meeting of the Vancouver Medical Association was held on February 13th, when Dr. W. A. Wilson presented a paper on "Aortic dilatation and aneurysm," the result of two years' study of such cases found in returned soldiers under the Soldiers' Civil Re-establishment. Not only did Dr. Wilson merit praise for the labour he had given to his subject, but he showed that aneurysms or dilatation of the aorta could be detected in the early stages and that syphilis was by no means the sole cause of such occurrences.

Two resolutions of some importance were passed by the general meeting, one to the effect that physicians

should refuse to write prescriptions for known drug addicts, unless they were confined in a hospital for treatment, and the other that the Pharmaceutical Association be communicated with and that every druggist be requested to telephone the physician for a corroboration of any prescription containing a narcotic. The druggists at a meeting of their association willingly consented to co-operate with the medical men in this particular.

Two clinical meetings of the Vancouver Medical Association were held during the month of February, one at the Hospital for the Insane, New Westminster, and the other at St. Paul's Hospital. Dr. McLellan demonstrated a new technique of skin grafting; Dr. Cunningham showed eye conditions following focal infections; Dr. McKee gave a study of blood chemistry in relation to medical and surgical conditions and Dr. Milburn presented statistics, cases and results of infected abortions.

Obituary

DR. W. T. WALLACE

Dr. W. T. Wallace, one of the best known Surgeons of Western Ontario was found dead in his bed on the morning of February 26th. Dr. Wallace had conducted a large practice for many years. A notice of his death was read at the Academy of Medicine in Toronto on the evening of March 7th, he having been a non-resident Fellow of that organization.

DR. J. W. WOOD

Dr. J. W. Wood, a well known figure in Lindsay, Ontario, died in Lindsay on March 2nd. The deceased was a prominent Orangeman and a Past Master in Masonry. He had been Warden of Victoria County, Mayor of the town of Lindsay, a member of the Board of Education, and was physician to the House of Refuge and the Jail. A good speaker, he was a power in the Conservative ranks, though the unsuccessful candidate against the U.F.O. party in 1919. He was well known as a sportsman and a great devotee of curling.

DR. GEO. A. BINGHAM

Dr. Geo. A. Bingham died in Toronto on March 2nd. A suitable obituary written by one of his old pupils and associates appears on another page of this issue of the Journal. The Editorial Board of the Journal wishes, however, to take this opportunity of saying that, in every matter which required an unselfish interest and which bore directly on the improvement of medical education, of medical standing and ethics, Dr. Bingham was always to be relied upon to express himself forcibly and well, and to follow his sayings by doings. No one member of the Medical Profession will be more missed as physician, teacher, and adviser. His work in the last few years in the cause of the O.M.A. and its expansion, in the re-organization of the C.M.A. is known to everyone. Much of the progress of these organizations has been due to his unselfish journeying here and there in the province. His active interest in the Journal has done much to help put it on its feet in recent months, and his steady support will with difficulty be replaced.

DR. GILBERT HARTIN

At Nelson B.C., on February 3, Dr. Gilbert Hartin, Med, '96, passed away of cancer at the age of 63. A native of Stittsville, Ont., he established himself in practice at Kaslo, B.C., in 1896 and moved to Nelson in 1907. Dr. Martin is survived by his wife, formerly Miss H. Bella Torney, of Richmond, Ont., and by two sons, One of whom is Dr. David Hartin, Med. '14.

DR. A. J. RICHER

The death occurred at Ste. Agathe on Feb. 26-1922 of Dr. A. J. Richer, in his 54th year. Born at Upton, Que., he came to Montreal when a young man and established a successful pharmacy in Pt. St. Charles. Having a keen scientific mind he took up the study of medicine and graduated from Bishop's College in 1892, afterwards going to Europe for post-graduate work. He spent some time in Berlin, Vienna and Cracow after which he obtained an appointment in the Pasteur Institute working as a collaborator with Roux, on diphtheria antitoxin. The first antitoxin used in Canada was sent by Dr. Ricker to one of his medical friends in Montreal.

On returning from Europe his great enterprise and scientific instincts were devoted to the study of tuberculosis. Dr. Ricker was a pioneer in developing the Laurentians as a health resort and established the first tubercular sanatorium in the province at Ste Agathe des Monts. Some years later "Brehmer Rest," the first "preventorium" was established through his efforts as a further step in the fight against the White Plague. He was actively connected with the anti-tubercular league and though of a retiring disposition was a recognized authority not only in this but in other countries. "He was an ever-ready help in time of trouble" and leaves many appreciative patients and friends.

He was unmarried and a member of the Anglican Church.

DR. G. C. READ

The tragic end of Dr. G. C. Read, of Kaslo B.C., was reported on February 13th. It appears that he left Kaslo for Ainsworth on the afternoon of Friday 11th. On Saturday morning it was found that the motor boat he had made use of had not been returned to the boathouse and a search was immediately instituted with all the available craft in the vicinity. Charred wreckage of the launch was found on the shores of Kootenay lake and it is considered that there was an explosion on board the launch shortly after it left Kaslo and that Dr. Read was either burned to death or drowned, the possibility of his having made the shore being regarded as very remote.

Dr. Read, whose age was about forty, came originally from Prince Edward Island and was a son of the late Captain Joseph Read M.P. He was educated at McGill, and had lived in Kaslo ten years. He leaves a wife and two children.

DR. DAVID LABAU

Dr. David LaBau of Victoria, B. C., was found in his office on February 11th with a bullet wound through his head. Dr. LaBau graduated in 1880 from Bellevue Hospital, New York, and commenced to practice in Nelson in 1889 and was the first medical health officer of that city. He moved to Spokane in 1907 and later practised in Victoria.

DR. GEORGE ELLIOTT

Dr. George Elliott was born at Troy, Wentworth County, in November, 1864. Here he lived until the age of ten, when, with his parents, he moved to Culloden, South Oxford. He was an apt scholar, succeeding, at the age of seventeen, in securing a second class certificate, going up for the examination direct from the public school.

In the fall of 1882, he attended Ingersoll Model School as a teacher in training; following this he taught for two years. He then took up a business course and for several years did office work, and, later, became a travelling salesman. In the latter capacity, he travelled a good deal, broadening thus his outlook on life. For some time, medicine was his aim, the teaching and business were but financial stepping stones. In 1891, he began his medical training at Trinity College, Toronto. Following graduation he settled in Toronto, began practice and became a teacher of Anatomy in his Alma Mater. Later, he bought from the late Dr. Beattie Nesbitt, the Dominion Medical Monthly, which he edited and published until last year. For several years he was Secretary of the Dominion Medical Association of the Toronto Clinical Society, and of the Aesculapian Club,—an indication of his willingness to do a good deal of dry unremunerative work for the good of the profession, and also of the confidence and good will of his confreres. He cherished this respect in which he was held by the profession, and lived up to its best traditions.

Dr. Elliott was a conscientious and skillful practitioner. Possessing poise and dignity, he inspired confidence in his patients by whom he was much esteemed, not only for his medical care, but for the many little extra attentions which he was constantly giving them.

Dr. Elliott was a great reader, had a fine memory and was familiar with the best in English literature. He surrounded himself with the world's best books, of which he had many beautiful editions—books it gives me pleasure even to inspect and handle. The contents of these nourished his intellect and fortified his spirit in his upward struggle.

Dr. Elliott's home life was ideal. He was ever a kindly, gentle man, hence was much beloved by wife and sons who greatly mourn his passing. He bore his final months of illness

with serenity; for he had "so lived that when the summons came to join the innumerable caravan that moves to that mysterious realm, where each shall take his chamber in the silent halls of death, he went not like the quarry slave at night, scourged to his dungeon, but sustained and soothed by an unfaltering trust, approached his grave like one who wraps the drapery of his couch about him, and lies down to pleasant dreams."

DR. GEORGE. A. BINGHAM

The medical profesion of Canada has lost one of its best known and highly esteemed members in the death from pneumonia of Dr. George A. Bingham. He had been in indifferent health for some months and had been urged by professional friends to take a prolonged holiday in the South in order to recuperate, but unfortunately he was taken ill Feb. 9th, on the eve of his departure. The attack, severe in onset, ran an unexpectedly favorable course; a pseudo-crisis occurred; the lung was clearing satisfactorily insomuch that hopes for his recovery were entertained, but symptoms of exhaustion developed; he became comatose and died on March 2nd, 1922.

Dr. Bingham was of Irish parentage, born in Durham County, Ontario, August 28th, 1860. He was educated in the public school and the Bowmanville High School and for some years was headmaster of the Harriston Public School. He entered Trinity Medical College in 1880 and after a distinguished undergraduate career received the degree M.D.C.M. Trinity University and M.B. University of Toronto in 1884. He continued his studies for a time in New York before taking up practice in Toronto. On his return he was appointed Demonstrator of Anatomy by his Alma Mater, which position he held from 1884 to 1889. In 1890 he was advanced to the post of Professor of Practical Anatomy and on the death of Dr. Hugh Robertson in 1892 he was made Professor of Applied Anatomy in succession to Dr. Luke Tesky. He was a member of the Surgical staffs of the Toronto General, St. Michael's and the Hospital for Sick Children and was advanced until he held the position of full surgeon to each. He was for many years Professor of Clinical Surgery in Trinity Medical College and on the amalgamation of the medical faculties of Toronto and Trinity in 1903 he became Professor of Clinical Surgery in the new faculty and chief of one of the surgical divisions of the Toronto General Hospital, positions he continued to hold at the time of his death. He was for a time a member of the senate of the University of Toronto: was a past president of the Ontario Medical Association, the Toronto Clinical Society and the Aesculapian Club of Toronto and a charter member of the Academy of Medicine. He attended the Vancouver and Halifax meetings of the Canadian Medical Association and took an active interest in the reorganization of the Association and placing the Journal on a firm footing. In this connection, he addressed many of the medical societies in Ontario during the past two years.

The writer can remember him since 1888, when as a freshman, he met him as Demonstrator of Practical Anatomy in the old Trinity School. His striking figure and personal magnetism made him a great favorite with the students. He was then, as always, handsome in appearance, the personification of dignity, with a massive head, broad forehead and a countenance expressive of great intellectual capacity.

Dr. Bingham was a brilliant student, a teacher of outstanding force and clearness of expression; a surgeon of the first rank, whose operative work was based on a thorough knowledge of anatomy. He had excellent clinical judgment and was fearless, though conservative as an operator.

He always appeared to the writer to have easily the finest voice and to be the most ready and eloquent speaker in the ranks of the Toronto profession. He was uniformly kindly, courteous, generous and ready to help a confrere and was notably free from academic "loftiness." There was nothing of meanness or pettiness in Dr. Bingham's nature. He had a philosophic outlook on life; was a lover of good literature, an interesting conversationalist and very companionable. In his younger days he was fond of outdoor life, especially fishing, being a member of a noted club on the French River but an accident some years ago resulting in permanent lameness necessitated a less active life. We shall attempt no laudation of his character; the warm place he held in the hearts of his colleagues is an all sufficient tribute.

Book Reviews

THE VITAMINE MANUAL. A Presentation of Essential Data about the New Food Factors. By Walter H. Eddy, Associate Professor Physiological Chemistry, Columbia University. Williams and Wilkins Company, 1921.

No recent biological investigations have been of greater value to dietitians, and to all physicians who undertake to guide mothers and nurses in the best methods of feeding infants than the discovery of vitamines and the part they play in general nutrition. The greater part of our knowledge concerning them has been gained during the past decade. Their importance demands the consideration and earnest study of every physician. In the above volume of one hundred pages the story is told of how they were discovered, of the sources from which they were obtained, of their chemical and physiological properties, and of the diseases that may result from deficiency of them in the dietary of growing children and also of adults. The facts are presented in a very interesting manner, and we cordially recommend the volume to physicians, and to all who have to deal with matters of diet. A. D. B.

1920 COLLECTED PAPERS OF THE MAYO CLINIC, ROCHESTER, MINN. Octavo of 1392 pages, 446 illustrations. Philadelphia and London: W. B. Saunders Company. Cloth, $12.00 net. Toronto, J. F. Hartz Company.

This collection is made up of various papers and addresses prepared by the members of the Staff of the Mayo Clinic during the past year or presented as communications to various medical societies. All have appeared as journal articles previous to their publication in book form. The volume is a splendid contribution to the progress of medicine and surgery, and is an excellent example of book work in its typography, paper and illustrations. We cannot review it nor even undertake to mention the one hundred and twenty-three articles it contains. They relate principally to operative surgery but there are as well numerous medical and pathological studies as well as addresses on medical education. It is a creditable addition to the previous volumes issued. J. H. E.

THE SPLEEN AND SOME OF ITS DISEASES. SIR BERKELEY MOYNIHAN, of Leeds, England. 129 pages with 13 full page diagrams. Philadelphia and London: W. B. Saunders Company, 1921. Cloth, $5.50 net. Canadian Agents, The J. F. Hartz Co., Limited, Toronto.

THIS work contains the material upon which the author based his Bradshaw Lecture, delivered at the Royal College of Surgeons of England in December 1920. It gives a surgeon's point of view of the possibilities of splenectomy in diseases of the spleen. There are references to medicinal and radiological treatment as found in the literature, but the author offers practically no personal opinion as to their value, restricting his opinions as to the results of surgical intervention in his own practice and quoting from the Mayo Clinic to such an extent as to almost overshadow his own personal experience. The anatomy of the spleen is first dealt with, followed by a sketch of the history of splenic surgery, and chapters upon the functions and pathology of the spleen. The various diseases are then considered in separate chapters. In pernicious anemia he considers that surgeons should rarely or never find it necessary to operate if the problem is fully and honestly stated to a patient or his relatives. In leukaemia, radium therapy is considered the best available treatment. In Hodgkins' disease it is very doubtful whether splenectomy has any effect good or ill upon the progress of the disease. In Banti's disease the only treatment is splenectomy. It is also to be undertaken in all appropriate cases of haemolytic jaundice. In polycythaemia, the Vaquez-Osler disease, the hypertrophy of the spleen is an attempt to keep the disease in check, and removal is an unsound practice. There is a closing chapter on the relation of the liver to the spleen and a consideration of the value of splenectomy and ligature of the splenic artery in cirrhosis of the liver. J.H.E

THE PSYCHOLOGY OF MEDICINE. T. W. MITCHELL, M.D., Crown, 8 vo pages, VIII, 187. London: Methuen & Co., Ltd. 1921.

A BOOK for those anxious to keep themselves abreast of modern thought in these departments of knowledge. It is principally devoted to a consideration of the doctrines of psycho-analysis dealing with the work of both Janet and Freud. It is not a practice but a presentation of the theories of the subject and an exposition of the principles underlying the psycho-therapeutic methods employed in the treatment of various neuroses.

CLINICAL DIAGNOSIS. A TEXT-BOOK OF CLINICAL MICROSCOPY AND CLINICAL CHEMISTRY. CHARLES PHILLIPS EMERSON, A.B., M.D., Professor of Medicine, Indiana University School of Medicine. 726 pages. 1921, J. B. Lippincott Company, Philadelphia.

WE welcome a new fifth edition of this most excellent work on clinical diagnosis, which was previously revised in 1911 and has been unobtainable for seven years. The first edition appeared in 1906 and at once became the favourite text-book of clinical laboratories over the continent. This edition has been entirely rewritten and reset. Without materially increasing the size of the volume, there are nearly 100 more pages of text than in the first edition while the index has grown from some 2400 items to over 3800. This gives some idea of the amount of new material which has been added. The references to the literature appear conveniently as foot notes and not as tabulated bibliography. Among the new sections added are those on serology, bacteriology and chemistry of the blood and spinal fluid. The author is emphatic in his belief that no physician has the right to entrust his laboratory work entirely to others, that the man who takes the history of the patient and makes the physical examination is the only one who can interpret correctly a labora-

tory finding. Though primarily intended for the medical student and for the practitioner who wishes to do his own laboratory work, it will enable the busy man to personally supervise or to interpret the laboratory work of others. We congratulate the author upon his successful presentation of modern clinical diagnosis. The work should have the same hearty reception as the former edition. J.H.E.

PRINCIPLES OF MEDICAL TREATMENT. GEORGE CHEEVER SHATTUCK, M.D., A.M., Boston. 5th revised edition. 309 pages, one half in blank. W. M. Leonard, Inc., Boston, 1921. Price $3.50.

THIS is an outline prepared for students at the Harvard Medical School and now slightly enlarged, first appearing as "A Synopsis of Medical Treatment." Most of the chapters are in skeleton form giving bare outlines. Recent unproved treatment is given with that generally accepted. The chapters by Hawes on tuberculosis and by Place on acute infectious diseases of childhood are excellent. As the fifty pages on medication are based principally upon preparations of the U.S. Dispensatory, the book cannot be recommended to students in Canada.

J.H.E.

MANUAL OF DISEASES OF THE STOMACH. WM. MCLENNAN, M.B., Honourary Consulting Physician, Western Infirmary, Glasgow. Published by Edward Arnold & Co., London, 1921.

A VERY serviceable book for the student and general practitioner as there is nothing in it beyond the ready comprehension of any reader. An excellent introduction on the physiology of digestion is followed by concise descriptions of the methods of gastro-intestinal investigation. One is pleased to see a proper consideration of both *x*-Ray methods and chemical examinations, and the inference one draws is that the author relies on no one point to the exclusion of others. There is little that is new in the arrangement of gastric and intestinal disorders though this is not to be wondered at since, after all, the number of diseases of the gastro-intestinal tract is not large. Proper stress is laid upon the influence of the nervous system introducing symptoms, and it is well pointed out throughout the volume that the observer takes no count of the influence of emotions in producing symptoms in the gastro-intestinal tract. There are one or two small points which need elucidation, Loewi's Test, the dropping of atropine into the eye to diagnose a disease of the pancreas, and a description of the vagus nerve with sensory endings capable of conducting pain, certainly do not seem in accord with a clear scientific view. There are more than the usual number of printer's errors.

A HALF CENTURY OF PUBLIC HEALTH. Jubilee Historical Volume of the American Public Health Association. MAZYCK P. RAVENEL, Editor-in-chief, pp. 461 & XI. New York American Public Health Association, 370 Seventh Avenue. Cloth, $5.25; Stiff paper cover, $3.75.

A SYMPOSIUM on Public Health by nineteen leading authorities, this memorial volume purports to be—and is—a remarkable review of the progress of the last fifty years—the kindergarten stage of Modern Public Health.

Canada is represented by Peter H. Bryce of Ottawa, an ex-president of the American Public Health Association, and a pioneer public health man in Canada. Of the three other countries having membership in this international association, the United States only is represented by authors in this volume although the Editor, Dr. Ravenel, refers to the many contributions from Cuba and Mexico, and lists their prominent men in public health.

A brief history of Public Health in the United States is given by Dr. Stephen Smith, founder and first President of the American Public Health Association. His book, "The City that Was," has already been reviewed in these columns.

Dr. Ravenel follows with a history of the Association itself, and of its great leaders. Dr. Bryce gives the history of Public Health in Canada, beginning in 1653.

A really first rate history of bacteriology is contributed by Prof. Frederic P. Gorham, Brown University, Providence, R.I.,; of American Mortality Progress by Frederick L. Hoffmann; and of the U.S. Quarantine System by Hugh S. Cumming, Surgeon General of the U.S. P.H.S.

Dr. Charles V. Chapin, the father of Modern Public Health in America, reviews the development of State and Municipal Control of Disease; George C. Whipple treats of water purification, Rudolph Hering of Sewage and Refuse, Earle B. Phelps of Industrial Wastes, Carl S. Alsberg of Food Control, Samuel C. Prescott of Food Conservation, Charles E. North of Milk, Philip Van Ingen of Child Welfare, Lawrence Veiller of Housing, George T. Palmer of Ventilation, George M. Kober of Industrial Hygiene, L. O. Howard of Medical Entomology, Lavinia L. Dock R.N., of Public Health Nursing.

Excellent historically, enlightening as showing the present day status, these articles are distinguished as a group in several ways, of which perhaps the most striking is the admission to Public Health circles, as a definite item worthy of a place in a semi-centennial public health volume, of an article on Public Health Nursing, by a Public Health Nurse. This is a landmark of no small significance.

Almost as significant, but in the opposite direction, is the total exclusion of anything relating to plumbing—an omission which at the beginning of the 50 year period reviewed would have been equivalent to leaving Hamlet out of the well-known play! The word itself occurs but twice—once incidentally, the second time in order to call attention to its disappearance from amongst items of public health interest.

The historical character of these articles does not admit ready quotation of striking conclusions reached. They are more valuable to the general student than to the technician, and still more to the student of history than to the general student.

As records of advances made this volume will always be of interest in itself and a ready source of reference for those preparing material involving reviews of the development in America of specialties in public health.

H.W.H.

HORMONE THERAPY—SERA, VACCINES AND DRUGS. D. MONTGOMERIE PATON, L.R.C.P. ET S. EDIN., ETC. London, Bailliere, Tindall and Cox, 1922. pp. 168. Price 7-6.

ACCORDING to the Author of this book the basis of the conception outlined is as follows, "all resistance to disease must be at least potentially present in a physiological condition, and that this resistance is developed to meet pathological changes by whatever means these are produced. Hence the foundation of all resistance whether natural or acquired, specific or non-specific must lie in the domain of physiology." "The conception of the production of hormones to meet pathological conditions affecting the tissues, and the use of the sera containing them so that, any one or all of them may be passively transferred to the patient is quite a new departure." "So is also the use of vaccines and drugs for the active production of different hormone balances, which either alone or in conjunction with other treatment are capable of pro-

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ducing results having no relation to the present conception of specific immunity."

The author has elaborated with considerable skill an hypothesis of "tissue resistance" in addition to specific resistance this latter may be natural or acquired. Tissue resistance means "the sum of the effects of hormone action on tissue metabolism." The author states that all his work has been clinical and that he has established to his own satisfaction that by the oral administration of diphtheria antitoxin and a special preparation of normal serum designated 'Hormonin,' (which by the way is so described that it practically falls into the class of proprietary remedies) the 'Hormone balance' can be so adjusted that conditions as dissimilar as neurasthenia and acute appendicitis are most favourably influenced.

It is possible that the therapeutic effects of the oral administration of diphtheria antitoxin, normal serum, and certain alkaloids have been overlooked, but this exposition is so hypothetical and so lacking in experimental data that not much weight is likely to be attached to the arguments advanced by Paton supporting such a view. Physicians in the United States and Canada are not likely to be favourably impressed by an author who describes one of his therapeutic agents in the following way— p. 41 "the usual normal serum is not suitable for this purpose, for it will not keep good (!) if exposed, as would be necessary in a mixture. To overcome this I made some suggestions to Messrs. D— and S—, manufacturing chemists of M— and by long and careful experiments they have materially improved on these suggestions, and have produced a preparation called 'Hormonin', which fulfils all the requirements of such a product"— This, it would seem, is very nearly advocating the use of a nostrum, the exact nature of which is left to the reader's imagination.

J.G.F.

AIDS TO FORENSIC MEDICINE AND TOXICOLOGY. W. G. AITCHISON ROBERTSON, M.D., D.Sc., F.R.C.P.E. Ninth ed., 1922. Fscp. 8vo. Pages xii 155. Bailliere, Tindall and Cox, London. Price 3-6.

THIS little book, a continuation of that written by Murrell, can be strongly recommended to all practitioners and students. It is well written, complete and concise, but is by no means so abridged as to be of little value. With this book alone as guide, the physician would find himself sufficiently posted to appear in court in any type of case, unless he were to give expert evidence on points in chemical toxicology or some other purely technical field. Any practitioner not possessing a book on Forensic Medicine would be well advised to purchase this moderately priced volume.

V.E.H.

1920 COLLECTED PAPERS OF THE MAYO CLINIC, Rochester, Minn. Octavo of 1392 pages, 446 illustrations, Philadelphia and London. W. B. Saunders Company. Cloth, $12.00 net. Toronto, J. F. Hartz Company.

THIS collection is made up of various papers and addresses prepared by the members of the Staff of the Mayo Clinic during the past year or presented as communications to various medical societies. All have appeared as journal articles previous to their publication in book form. The volume is a splendid contribution to the progress of medicine and surgery, and is an excellent example of book work in its typography, paper and illustrations. We cannot review it nor even undertake to mention the one hundred and twenty-three articles it contains. They relate principally to operative surgery but there are as well numerous medical and pathological studies as well as addresses on medical education. It is a creditable addition to the previous volumes issued.

J.H.E.

Books Received

The following books have been received and the courtesy of the Publishers in sending them is duly acknowledged. Reviews will be made from time to time of books selected from those which have been received.

The Relations of Tuberculosis to General Bodily Conditions and to Other Diseases—The first Mitchell lecture on Tuberculosis, delivered on Nov. 1st, 1921, before the Royal College of Physicians, London, with an appendix on Literature relating to the subject of so-called spontaneous idiopathic pneumothorax, etc. By F. Parkes Weber, M.A., M.D., F.R.C.P. Publishers: H. K. Lewis and Co., Ltd., 28 Gower Place, London, W.C.I., Eng., 1921. Price, 2s. 6d. net. paper covers. 27 pages.

Aids to Forensic Medicine and Toxicology—By W. G. Aitchison Robertson, M.D., D.Sc., F.R.C.P.E., Ninth Edition. 155 pages. Price, 3s. 6d. net. Published by Belleire, Tindall and Cox, 8 Henrietta Street, Covent Garden, London, Eng., 1922.

Hormone Therapy By Sera, Vaccines, and Drugs—By D. Montgomerie Paton, L.R.C.P. et S. Edin., etc. 168 pages. Price 7s. 6d. Published by Bailliere, Tindall and Cox, 8 Henrietta Street, Covent Garden, London, Eng., 1922.

The Evolution of Modern Medicine. A series of Lectures delivered at Yale University on the Silliman Foundation in April, 1913. By Sir William Osler, Bart., M.D., F.R.S. Publishers: New Haven Yale University Press. 1921, $7.00.

The Treatment of Common Female Ailments—By Frederick John McCann, M.D., Edin., M.R.C.P., London, F.R.C.S., England. 145 pages. Price 8s. 6d. net. Published by Messrs. Edward Arnold & Co., 41 Maddox Street, London, W.I., England, 1922.

Lessons on Tuberculosis and Consumption—By Charles E. Atkinson, M.D., 12 mo, Cloth, 470 pages. Price $2.50 net. Published by Funk & Wagnalls Company, New York, 1922.

The Mechanics of the Digestive Tract—Walter C. Alvarez, M.D. 192 pages with twenty-two illustrations. Price $3.50 net. Published by Paul B. Hoeber, New York, 1922.

Treatment of the Neuroses—By Ernest Jones, M.D. 8 Henrietta Street, Covent Garden, London, Eng., (Lond.) M.R.C.P. (Lond.). 233 pages. Price 10s. 6d. net. Published by Bailliere, Tindall and Cox, 1920.

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Ephraim McDowell—"Father of Ovariotomy" and Founder of Abdominal Surgery; with an appendix on Jane Todd Crawford. By August Schachner, M.D., F.A.C.S., Publishers: J. B. Lippincott Company, Philadelphia and London. 1921. 314 pages, illustrated.

Collected Papers on the Psychology of Phantasy—By Dr. Constance E. Long, Late Senior Assistant Elizabeth Garrett Anderson Hospital; Late Medical Officer, Education Board and Ex-President Association of Registered Medical Women. 216 pages. Price 10s. 6d. net. Publishers, Bailliere, Tindall and Cox, 8 Henrietta Street, Covent Garden, London, Eng., 1920.

Exophthalmic Goitre—A Lecture delivered at the North East London Post Graduate College, April 27, 1921, By Walter Edmunds, M.A., M.Ch.Cantab., F.R.C.S. 36 pages, 4 plates. Price 3s. 6d. net. Published by Bailliere, Tindall and Cox, 8 Henrietta Street, Covent Garden, London, Eng., 1921.

A Half Century of Public Health—Jubilee Historical Volume of the American Public Health Association. Edited by Mazyck P. Ravenel, M.D., Published by the American Public Health Association, New York, 1921. 461 pages. Cloth. $5.25. Paper, $3.75.

International Clinics—A quarterly of illustrated clinical lectures and especially prepared original articles on treatment, medicine, surgery, neurology, pædiatrics, obstetrics, gynæcology, orthopædics, pathology, dermatology, ophthalmology, otology, rhinology, laryngology, hygiene, and other topics of interest to students and practitioners, by leading members of the medical profession throughout the world. Edited by H. R. M. Landis, M.D., Philadelphia, U.S.A. Volume IV. Thirty-first series, 1921. Illustrated. 300 pages. Published by J. B. Lippincott Company, Philadelphia, Pa., U.S.A.

Mentally Deficient Children—Their Treatment and Training—By G. E. Shuttleworth, B. A., M.D., and W. A. Potts, M.A., M.D. Fifth Edition, 320 pages; Illustrations 29, including 21 plates. Price 10s 6d net. Published by H. K. Lewis & Co. Ltd., 28 Gower Place, London, W.C.1 1922.

Medical and Surgical Reports of the Episcopal Hospital—Volume V. Edited by Astley P. C. Ashhurst, M.D. 502 pages; illustrated. Published by Wm. J. Dornan, Philadelphia, 1920.

The City that Was—By Stephen Smith, A.M., M.D. LL.D. 211 pages. Published by Frank Allaben, 3 West Forty-second Street, New York, N. Y.

Protein Therapy and Nonspecific Resistance—By William F. Petersen, M.D., with an introduction by Joseph L. Miller, M.D. 307 pages. Published by The MacMillan Company, New York, 1922.

L'Encephalite Lethargique—By Le Professeur Achard, with 15 illustrations. Published by Librairie J. B. Bailliere et Fils, 19, Rue Hautefeuille, 19. Paris. 1921.

Clinical Electrocardiography—By Frederick A. Willius, M.D. Section on Clinical Electrocardiography, The Mayo Clinic, Rochester, Minn., and the Mayo Foundation, University of Minnesota. Octave of 188 pages with 185 illustrations. Philadelphia and London. W. B. Saunders Company, 1922. Cloth $5.50 net. J. F. Hartz Co. Limited, Toronto.

Papers from the Mayo Foundation—For Medical Education and Research and the Graduate School of Medicine of the University of Minnesota, covering the period of 1915-1920. Octavo volume of 695 pages with 203 illustrations. Philadelphia and London; W. B. Saunders Company, 1921. Cloth $11.00 net. J. F. Hartz Co. Limited, Toronto.

Neoplastic Diseases—A treatise on Tumors, by James Ewing, M.D., Sc.D. Second Edition, revised and enlarged. Octavo of 1054 pages with 514 illustrations. Philadelphia and London, W. B. Saunders Company, 1922. Cloth $13.25 net. The J. F.Hartz Company, Limited, Toronto.

Psychoanalysis: Its Theories and Practical Application. By A. A. Brill, Ph.B., M.D. Third Edition, thoroughly revised. Octavo of 468 pages. Philadelphia & London; W. B. Saunders Company, 1922. Cloth $5.50. The J. F. Hartz Co. Ltd., Toronto.

The American Illustrated Medical Dictionary—Eleventh Edition, revised and enlarged. A new and complete dictionary of terms used in medicine, surgery, dentistry, pharmacy, chemistry, veterinary science, nursing, biology, and kindred branches, with new and elaborate tables. Edited by W. A. Newman Dorland, M.D. Large octavo of 1229 pages with 338 illustrations, 141 in colors; containing over 1500 new terms. W. B. Saunders Co., Philadelphia, 1921. Flexible leather, $7.75 net; thumb index, $8.75 net. The J. F. Hartz Co. Ltd. Toronto.

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